November 13, 1973
THIS ISSUE CONTAINS:
HS - 013 324 - HS - 013 405
HS - 800 849; 869; 883

13-2

U.S. Department of Transportation
National Highway Traffic Safety Administration

Shelve in Stacks
S.B.J.

Highway Safety Literature

. . . A SEMI-MONTHLY ABSTRACT JOURNAL

AVAILABILITY OF DOCUMENTS

Documents listed in **Highway Safety Literature** are **not** available from the National Highway Traffic Safety Administration. They must be ordered from the sources indicated on the citations, usually at cost. Ordering information for each of the sources is listed below.

NTIS: National Technical Information Service, Springfield, Va. 22151. **Order by title and accession number: PB, AD, or HS.**

GPO: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. **Give corporate author, title, personal author, and report number.**

Corporate author: Contact corporate author.

Reference copy only: Consult your librarian.

See serial citation: Obtain through normal loan or purchase.

SAE: Society of Automotive Engineers, Dept. HSL, 2 Pennsylvania Plaza, New York, N.Y. 10001. **Order by title and SAE report numbers.**

HRB: Highway Research Board, National Academy of Sciences, 2101 Constitution Ave., N.W., Washington, D.C. 20418.

Material directly related to Highway and/or Motor Vehicle Safety is solicited for inclusion in Highway Safety Literature. Topics must fall within the scope of the mission of the National Highway Traffic Safety Administration. Submit material, together with a written statement of approval for publication to:

Office of Administrative Services (N48-50)
National Highway Traffic
Safety Administration
400 7th Street, S.W.
Washington, D.C. 20590

Please indicate availability source and price for the material.

Special notice: Material published in HSL is intended only for information. References to brand names, equipment models or companies does not imply endorsement by the NHTSA or the U.S. Department of Transportation.

[redacted]

SAMPLE ENTRIES

JOURNAL ENTRY

Title of Document

SYNTHESIS OF CASE LAW JURISPRUDENCE RELATING TO WET-WEATHER HIGHWAY CONDITIONS

Journal Citation

Highway Research Record n 376 p29-36 (1971)

Author(s)

D. C. Oliver 1971

Sponsored by Highway Res. Board Steering Com. for Workshop on Anti-Skid Program Management and presented at the workshop.

Search Terms

Descriptors: *Liability, *Negligence, *Accident responsibility, *Legal responsibility, *Wet road conditions, *Court decisions, *State government, *Skidding accidents, *Warning signs, *Highway maintenance, *Litigation, *Icy road conditions,

Abstract

The extant case law on legal liability for accidents occurring on icy and wet highways has established three central areas and one subarea in the jurisprudence of maintenance liability. These areas are compliance with general duties in order to escape liability; damages resulting from noncompliance (negligence); contributory negligence as a bar to recovery; and advisory signing as a technique in meeting general duties. Court decisions covering these four areas are presented.

NHTSA Accession Number

HS-012 289

*Subject heading in Subject Index

CONTRACT REPORT

EQUIPMENT AND PROCEDURES FOR MEASURING GLARE FOR MOTOR VEHICLES. FINAL REPORT

Corporate author

Teledyne Brown Engineering

N. E. ChattertonJ. D. HayesE. W. George 1972 102p

Contract DOT-HS-089-1-139

Availability

NTIS

Descriptors: *Glare, *Glare reduction, *Visual perception, *Photometers, *Luminance, *Hydraulic equipment, *Central vision, *Field of view, *Backgrounds, *Contrast, *Light conditions, *Brightness, *Test facilities, *Test equipment, *Vehicle safety standards, *Simulators, *Light, *Reflectance, *Measuring instruments,

A procedure and description of equipment for measuring glare from a driver's own vehicle are presented. The procedures are based on a disability glare theory as applied to foveal vision. Two pieces of apparatus were constructed to provide the measurement capability. One of them simulates diffuse sky glare and the other simulates direct solar glare. Methods of combining data from these measurements are presented along with scaling laws selected to provide a value for glare as it would be under natural daylight conditions. A standard for allowable glare levels from the vehicle is developed which is independent of the measurement procedure. Test results from a passenger car are presented and compared with this standard. Recommendations for improvements to the apparatus and additional research requirements for improvement to the theory are made.

HS-800 731

*Subject heading in Subject Index

1. ACCIDENTS

A REPORT OF DISCUSSIONS. A COMPANION TO PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12282P
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Highway safety, Accident prevention, Injury prevention, Accident research, Pedestrian safety, Motorcycle safety, Bicycle safety, Drinking drivers, Traffic management, Traffic law enforcement, Intersection collisions, Emergency medical services, Highway safety organizations, Young adult drivers, Adolescent drivers, Highway design, Vehicle design, Alcohol usage deterrents, Driver education, Safety campaigns, Australia, Transportation planning, Land usage planning

Commentaries are given on papers presented at the conference and discussions which occurred at the end of each session are reported. Major topics covered at the conference were accident information--present knowledge and future needs; traffic law enforcement; intersection accidents; pedestrians, motorcyclists, and cyclists; the alcohol problem; traffic management techniques; emergency rescue services; institutional framework in which road safety operates; the young driver as a special case; effects of road design on road safety; vehicle factors; alcohol countermeasures; transportation and land usage planning; and education and publicity.
HS-013 336

PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12680P REFS
Includes HS-013 338--HS-013 405.
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Accident prevention, Accident research, Accident rates, Australia, Traffic law enforcement, Intersection collisions, Traffic management, Emergency medical services, Driver education, Highway safety organizations, Safety education, Transportation systems, Highway design, Drinking drivers, Alcohol usage deterrents, Pedestrian safety, Adolescent drivers, Young adult drivers, Safety campaigns, Vehicle design, Safety design, Occupant protection, Seat belt usage laws, Injury prevention, Motorcycle safety, Bicycle safety, Traffic control devices, Transportation planning, Benefit cost analysis, Highway safety, Land usage planning

This symposium was an integral part of a national review of the road accident situation in Australia undertaken by the Expert Group on Road Safety. The topics covered include present accident knowledge and information needs for the prevention of future accidents, traffic law enforcement, intersection collisions, pedestrians, bicyclists, motorcyclists, the alcohol problem and countermeasures, traffic management techniques, emergency rescue services; the institutional framework in which road safety operates, the young driver, highway design, vehicle factors, planning for future problems, and highway safety education and publicity.
HS-013 337

1A. Emergency Services

A STUDY OF THE MELBOURNE SYSTEM OF EMERGENCY RESCUE SERVICES

Monash Univ., Clayton (Australia)
P. D. Clark 1972 43refs
In HS-013 337

Emergency medical services, Ambulances, Hospital emergency rooms, Communication systems, Police traffic services, Ambulance personnel training, Occupant rescue, Ambulance design, Emergency equipment, Postcrash phase, Ambulance personnel, Emergency signaling devices, Time factors, Transportation of injured, Data acquisition, Data processing, Melbourne, Systems analysis, Towing

Melbourne's emergency care system is examined with a view to describing the roles of the separate services in the provision of care for the injured. The desirability of an overall systems approach to emergency care problems in emphasized. Direct observation of the care provided for crash victims at the scene and in the hospital casualty department suggests that standards of ambulance care in Melbourne are satisfactory within the limits of present operations. There is a need for reorganization of hospital casualty departments and centralized control over emergency beds to ensure the distribution of emergency patients between the hospitals and to prevent use of these departments by non-urgent patients seeking primary medical care. A nationally coordinated integrated data recording system to permit continuous collection of data which relate to patient care from the time of the crash until the recovery of the injured victim is needed.
HS-013 362

THE AUSTRALIAN MEDICAL ASSOCIATION AMBULANCE SURVEY

Australian Medical Assoc., Glebe
E. S. Stuckey 1972
In HS-013 337

Ambulances, Emergency medical services, Ambulance personnel, Transportation of injured, Vehicle mileage, Fatality rates, Injury rates, Australia, Surveys, Questionnaires

During the first quarter of 1971 there were 1.1 million ambulance trips in Australia, 12,494 accidents attended by ambulances, and 17,797 accident victims carried in ambulances. Less than 4% of accident victims are dead at the scene or die in transit. Deaths in transit in general amount to .7% or less. Accidents producing deaths at the roadside or in transit are highest in rural areas. States with large rural areas have more ambulances, but the workload per vehicle in rural areas is less than in urban areas. Accidents requiring attendence by more than one ambulance are more common in major cities. Accidents involving transport of more than one patient occur more frequently in rural areas. The most populous states do not usually use two ambulance officers per vehicle for accident trips. Part-time ambulance officers are used more frequently in rural areas.
HS-013 363

ORGANISATION AND OPERATION OF RURAL AMBULANCE SERVICES

Victorian Ambulance Services (Australia)
H. G. Berry 1972
In HS-013 337

Ambulances, Emergency medical services, Rural areas, Emergency reporting systems, Radiotelephones, Radio communication, Ambulance personnel training, Medical case reports, Ambulance design, Emergency equipment, Inhalation devices, Burns, Fractures, Shock (pathology), Analgesics, Transportation of injured, Aircraft, Australia

Suggestions for improvement of Australian rural ambulance services include greater use of two way radio systems by doctors at the hospital to advise ambulance personnel at the accident scene; ensuring that emergency radiotelephones are always answered by an experienced resusitationist familiar with the ambulance personnel and procedures; acceptance of report forms by ambulance officers and hospital staff; and establishment of formal clinical teaching for ambulance personnel. Ambulances should be designed to carry two patients under the best circumstances but be capable of carrying up to four stretcher patients with some compromise of facilities. It is not feasible to manufacture a special vehicle specifically for ambulance work. Ambulance equipment used for handling patients and treating respiratory injuries, bleeding, fractures, burns, analgesia, and shock is discussed. Air ambulance service is available in Queensland, Victoria, New South Wales, South Australia, and Tasmania. It is recommended that helicopter ambulances be adopted when economically feasible.
HS-013 364

A STUDY OF MILITARY ASSISTANCE IN SAFETY AND TRAFFIC (MAST). FINAL REPORT

Ohio State Univ., Columbus
M. D. Keller, W. R. Gemma, R. C. Chase, H.F. Ptak 1973 143p
Contract DOT-HS-115-2-304
Report for 14 Feb-31 Dec 1972. Includes 'A Study of Military Assistance in Safety and Traffic (MAST), San Antonio, Texas, 15 July 1970 to 31 December 1970,' by M. D. Keller.
NTIS

Emergency medical services, Seattle, Phoenix, Denver, Boise, Transportation of injured, Helicopter ambulances, Military vehicles, Time factors, Sex factors, Month, Day of week, Emergency medical service councils, San Antonio, Local government, Epidemiology, Ambulance personnel, Ambulance design, Ambulance personnel training, Federal role, Planning

Four Military Assistance in Safety and Traffic (MAST) operations at Fort Lewis, Luke Air Force Base, Fort Carson, and Mountain Home Air Force Base are analyzed. Organizational and regional differences were examined to underline significant data and factors for planning future MAST operations. A comprehensive list of emergency medical services components and variables related to MAST planning resources is presented. A report of the first MAST operation, which was established in San Antonio, is included.
HS-800 883

1B. Injuries

A STUDY OF INJURY PATTERNS IN VICTORIA

Royal Australasian Coll. of Surgeons, Melbourne (Australia)
P. G. Nelson 1972 5refs
In HS-013 337

Injury research, Injury case reports, Seat belt effectiveness, Victoria (Australia), Feasibility studies, Accident report forms, Injury prevention

A Road Trauma Report form (RTR) and a Road Crash Report form (RCR) were developed to establish and relate injury patterns in automobile accidents in Victoria to the circumstances surrounding the accident at the site. The RTR is completed by hospital resident medical officers or by the Coroner's deputy who performs the autopsy. The RCR is completed for injury accidents by ambulance officers, tow truck drivers, or claimants insured with three of the major motor insurers in Victoria. All reports are returned to a coordinating center where the forms are coded, matched where possible, and information from them is punched onto cards in preparation for transfer to computer tape. A feasibility study indicated that the return rate for forms was lower than expected but that much valuable information was being collected. Preliminary results of the full scale study indicate that many injuries could perhaps be prevented by seat belt usage.
HS-013 341

THE EFFECT OF TRAFFIC LAW AND ENFORCEMENT ON INJURY PATTERNS

Royal Brisbane Hosp. (Australia); Royal Children's Hosp., Brisbane (Australia)
K. G. Jamieson 1972 12refs
In HS-013 337

Traffic law enforcement, Injury prevention, Age factors, Injury severity, Injury research, Skull fractures, Brain injuries, Automobile models, Accident types, Highway design, Drinking drivers, Driver criminal history, Driver records, Epidural hematoma, Subdural hematoma, Fatality rates

Injury patterns are influenced by anatomical and physiological factors; vehicle type; accident type; environmental factors; and whether the victim was a driver, passenger, cyclist, or pedestrian. Injury statistics are not always reliable because the definition of injury is so broad that great changes in severity are possible without a significant change in number, and because of differences in injury reporting techniques or study design. Injury patterns may be used to detect specific hazards and monitor changes in the level and type of energy expended and its manner of delivery. The fact that drivers involved in severe or fatal accidents generally have higher blood alcohol levels and a higher incidence of criminal records than the population at large indicates that severe accidents involve an unduly high proportion of those with non-conforming behavior who are least likely to be influenced by countermeasures dependent upon user compliance.
HS-013 344

A STUDY OF MEASURES TO REDUCE INJURIES TO PEDESTRIANS

New South Wales Dept. of Motor Transport, Sydney (Australia)
R. G. Vaughan 1972 29refs
In HS-013 337

Vehicle pedestrian collisions, Pedestrian injuries, Pedestrian vehicle interface, Vehicle design, Injury factors, Injury research, Human body impact tolerances, New South Wales, Injury severity, Impact velocity, Impact angle, Crash phase, Pedestrian fatalities, Accident statistics, Secondary collisions, Histograms, Pedestrian age, Accident analysis, Energy absorption, Fractures, Injuries by body area

The dynamics of vehicle pedestrian collisions are described and a study of factors influencing the severity of pedestrian injuries

is discussed. Data were obtained through the use of a special pedestrian accident report form issued to 10 police divisions in the Sydney area and used for the period May to June 1969, inclusive. The data, consisting of 115 collisions, were grouped into moderate, severe, and fatal injury groups. The distributions of contact points, impact speeds, pedestrian ages, attitude of the pedestrians to the vehicles, and vehicle types were compared. Impact speed and impact point distribution were found to influence the severity of pedestrian injuries. Colliding with the central area of the vehicle produced the most severe injuries and colliding with vehicle edge area produced the least severe injuries. The moderate injury collisions occurred at lower speeds than severe or fatal collisions.
HS-013 349

CAR SHAPE AND PEDESTRIAN INJURY

Harvard School of Public Health, Boston, Mass.
For primary bibliographic entry see Fld. 3K.
HS-013 350

1C. Investigation And Records

APPROACHING THE REDUCTION OF ROAD LOSSES--REPLACING GUESSWORK WITH LOGIC, SPECIFICITY AND SCIENTIFICALLY DETERMINED FACT

Insurance Inst. for Hwy. Safety, Washington, D.C.
W. Haddon, Jr. 1972 23refs
In HS-013 337

Injury prevention, Damage prevention, Accident prevention, Precrash phase, Crash phase, Postcrash phase, Occupant protection, Packaging, Safety design, Matrix reduction, Injury severity, Impact velocity, Vehicle weight, Restraint system effectiveness, Stopping distance, Semantics, Windshields, Energy absorbing steering columns, Head restraints, Energy absorbing bumpers, Crashworthiness

Road losses and measures to reduce them are a subset of energy-damage losses of all kinds and the factors that determine their occurrence. Because there is no present evidence that vehicle crashes can be eliminated or adequately reduced in the forseeable future, emphasis should be placed on reducing losses in damaged people and property rather than exclusively on crash prevention. This can be most effectively accomplished by concentrating on crash phase countermeasures such as energy absorbing steering columns and bumpers, safety glass, head restraints, and seat belt usage. Matrices are used to classify loss generating situations.
HS-013 338

IN-DEPTH STUDIES OF CAR CRASHES

Monash Univ., Clayton (Australia)
G. A. Ryan 1972 19refs
In HS-013 337

Accident investigation, Multidisciplinary teams, Accident risk forecasting, Precrash phase, Crash phase, Postcrash phase, Accident studies, Accident case reports

There are two types of in-depth case study methods of accident investigation: the on-scene method involving a multidisciplinary research team and follow-up studies conducted by persons working separately to produce a joint analysis and reconstruction of the accident. Case studies involve determination of the population at risk, the the outcome of each crash phase, and the variables which may affect the outcome. The case study method of accident investigation using case-affected and/or cohort study designs is described for the precrash, crash, and postcrash phases.
HS-013 340

THE SIGNIFICANCE OF ACCIDENT RATES

Victoria Country Roads Board (Australia)
J. D. Thorpe 1972 22refs
In HS-013 337

Accident rates, Accident prevention, Fatality rates, Accident reports, Accident risk forecasting, Australia, United States, Great Britain, Speed, Rural accidents, Urban accidents, Vehicle mileage, Single vehicle accidents, Vehicle registration, International factors

Much of the difference between fatal accidents per 100 million vehicle miles in different countries is due to the degree of motorization and proportion of vehicle miles run in rural and urban areas. Much effort will be required before all countries publish accident statistics that allow direct international comparison, and such a result may never be achieved. Great care must be taken to determine if overseas findings are applicable in Australia before implementing any action based on overseas reports. Researchers must ensure that the base used to measure exposure really expresses exposure in a manner applicable to the investigation in hand. There is great need to get more uniformity in the bases used in published national road accident statistics in different countries. Parallel research studies in different countries might pinpoint reasons why the accident rate of some driver/vehicle combinations is lower in one country than another.
HS-013 342

AN ASSESSMENT OF MEASURES TO REDUCE PEDESTRIAN ACCIDENTS

South Australian Road Traf. Board
For primary bibliographic entry see Fld. 3K.
HS-013 348

THE USE OF GIVE WAY SIGNS AND ROAD MARKINGS AT INTERSECTIONS

Tasmania Transport Commission (Australia)
For primary bibliographic entry see Fld. 2I.
HS-013 359

THE RELATIONSHIP OF TRAFFIC SIGNALS TO ROAD ACCIDENTS

Queensland Main Roads Dept. (Australia)
R. D. Chalk, D. M. Dent 1972 6refs
In HS-013 337

Intersection collisions, Accident analysis, Brisbane, Accident studies, Traffic signal effectiveness, Accident rates, Accident severity, Signalized intersections, Uncontrolled intersections, Traffic signal controllers, Traffic signal timing, Right turns, Channelized intersections

To determine the effectiveness of traffic signals in reducing accidents, an analysis was made of accidents occurring at 48 selected intersections in Brisbane. Accidents at signalized and unsignalized intersections over a period of two years (1969 to 1970) were compared. The adopted basis for equating accidents

was equivalent personal injury (E.P.I.) whereby one unit is recorded for each fatal or personal injury and one quarter is used for each property damage accident reported. Little significance was discovered between the accident rates at signalized intersections and unsignalized intersections; unsignalized intersections generally had a lower E.P.I. rate than signalized, but this is to be expected because of the priority system of signal installation; and signalized intersections at the periphery of the city, or at fairly isolated sites have a higher accident rate than at signals closer to the central business district on major arterial routes.
HS-013 361

DETERMINATION OF PRIORITIES

Australia Bureau of Transport Economics, Canberra
R. W. Cole 1972 5refs
In HS-013 337

Accident prevention, Benefit cost analysis, Accident costs, Fatalities, Injury costs, Damage costs, Injury prevention, Damage prevention, Seat belt usage laws, Seat belt standards, Seat belt costs, Australia

Benefit cost analysis can be used to help governments set highway safety priorities. An intuitive approach to highway safety, in which no quantification of the value of saving a life on the roads is attempted, nonetheless implicitly has such an assumed figure built in. The advantage of benefit cost analysis is that it makes the assumptions explicit and produces conclusions which follow from those assumptions. Any measure taken to improve highway safety should have the aim of reducing the accident costs, which must be categorized into fatality, injury, and vehicle and property damage costs. Methods which can be used for benefit cost analysis of fatality, injury, and damage prevention and a benefit cost analysis of the compulsory installation and wearing of seat belts are presented.
HS-013 367

A SURVEY OF ACCIDENTS ON SUB-STANDARD RURAL HIGHWAYS IN TASMANIA

Tasmania Public Works Dept. (Australia)
For primary bibliographic entry see Fld. 2D.
HS-013 375

EFFECTS OF ROAD DESIGN ON ROAD SAFETY: A TIME FOR REVIEW?

South Australia Highways Dept.
For primary bibliographic entry see Fld. 2D.
HS-013 376

THE EFFECTIVENESS OF THE N.S.W. STREET LIGHTING SUBSIDY SCHEME

New South Wales Univ., Sydney (Australia)
For primary bibliographic entry see Fld. 2E.
HS-013 378

AN EVALUATION OF MEASURES TO REDUCE ACCIDENT OCCURRENCE

Melbourne Univ. (Australia)
For primary bibliographic entry see Fld. 5D.
HS-013 382

THE ENVIRONMENT

Western Australia Main Roads Dept.
For primary bibliographic entry see Fld. 2D.
HS-013 400

2. HIGHWAY SAFETY

STATISTICAL INFORMATION IN RELATION TO ACCIDENTS

Australia Dept. of Civil Aviation, Melbourne
J. C. Lane 1972 25refs
In HS-013 337

Accident statistics, Accident records, Vehicle registration, Driver records, Accident reports, Data uniformity, Data analysis, Australia, Injury statistics, Accident rates, Computerized records management

Mass data analysis is essential for describing and monitoring the safety performance of the Australian road traffic system and for suggesting and evaluating countermeasures. Mass data analysis is little used for these purposes at present because of deficient and inaccessible records. The quality of record keeping varies widely. Some states use computerized vehicle and driver records and others are contemplating this step. One state uses computerized accident records. Two independent proposals exist for uniform accident recording. To secure compatibility of these records the strongest case exists for prompt, nationwide agreement on definitions and items to be recorded for vehicle, license, and accident records. High quality records are likely to be achieved if a single institution in each state is responsible for compiling, storing, and processing vehicle, licensing, and accident records. A central bureau, to compile national statistics, should also monitor the compatibility of classifications used by the various states.
HS-013 339

TRAFFIC ENGINEERING ASPECTS OF INTERSECTION ACCIDENTS

Pak-Poy (P.G.) and Associates (Australia)
I. D. Gordon 1972 12refs
In HS-013 337

Intersection collisions, Accident statistics, Accident prevention, Traffic control, Australia, Accident rates, Sign effectiveness, Traffic signal effectiveness, Accident studies, Accident types, Accident severity, Injury rates, Fatality rates, Damage severity, Yield signs, Stop signs, Signalized intersections, Flashing traffic signals, Highway improvements, Channelized intersections, Traffic engineering

A review of accident statistics indicates the seriousness of the intersection accident in Australia. Intersection accidents form 45% of all casualty accidents, involving 24% of fatalities and 47% of injuries on Australian roads. The effectiveness of intersection control measures--yield signs, stop signs, traffic signals, flashing signals, roundabouts, channelized intersections, and physical alteration of intersections--in reducing intersection accidents is discussed.
HS-013 346

THE EFFECT OF CO-ORDINATED TRAFFIC SIGNAL SYSTEMS ON TRAFFIC ACCIDENTS

New South Wales Dept. of Motor Transport, Sydney (Australia)
For primary bibliographic entry see Fld. 2I.
HS-013 358

THE APPLICATION OF CERTAIN TRAFFIC MANAGEMENT TECHNIQUES AND THEIR EFFECT ON ROAD SAFETY

Western Australia Main Roads Dept.
For primary bibliographic entry see Fld. 2I.
HS-013 360

2. HIGHWAY SAFETY

A REPORT OF DISCUSSIONS. A COMPANION TO PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12282P

Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Highway safety, Accident prevention, Injury prevention, Accident research, Pedestrian safety, Motorcycle safety, Bicycle safety, Drinking drivers, Traffic management, Traffic law enforcement, Intersection collisions, Emergency medical services, Highway safety organizations, Young adult drivers, Adolescent drivers, Highway design, Vehicle design, Alcohol usage deterrents, Driver education, Safety campaigns, Australia, Transportation planning, Land usage planning

Commentaries are given on papers presented at the conference and discussions which occurred at the end of each session are reported. Major topics covered at the conference were accident information--present knowledge and future needs; traffic law enforcement; intersection accidents; pedestrians, motorcyclists, and cyclists; the alcohol problem; traffic management techniques; emergency rescue services; institutional framework in which road safety operates; the young driver as a special case; effects of road design on road safety; vehicle factors; alcohol countermeasures; transportation and land usage planning; and education and publicity.
HS-013 336

PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12680P REFS
Includes HS-013 338--HS-013 405.
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Accident prevention, Accident research, Accident rates, Australia, Traffic law enforcement, Intersection collisions, Traffic management, Emergency medical services, Driver education, Highway safety organizations, Safety education, Transportation systems, Highway design, Drinking drivers, Alcohol usage deterrents, Pedestrian safety, Adolescent drivers, Young adult drivers, Safety campaigns, Vehicle design, Safety design, Occupant protection, Seat belt usage laws, Injury prevention, Motorcycle safety, Bicycle safety, Traffic control devices, Transportation planning, Benefit cost analysis, Highway safety, Land usage planning

This symposium was an integral part of a national review of the road accident situation in Australia undertaken by the Expert Group on Road Safety. The topics covered include present accident knowledge and information needs for the prevention of future accidents, traffic law enforcement, intersection collisions, pedestrians, bicyclists, motorcyclists, the alcohol problem and countermeasures, traffic management techniques, emergency rescue services; the institutional framework in which road safety operates, the young driver, highway design, vehicle factors, planning for future problems, and highway safety education and publicity.
HS-013 337

ORGANISATIONS RESPONSIBLE FOR ROAD SAFETY AND THEIR INTER-RELATIONSHIPS

Victoria Road Safety and Traf. Authority (Australia)
J. G. Westland 1972 3refs
In HS-013 337

Highway safety, Federal role, State action, Local government, Intergovernmental relations, Australia

The responsibilities of the Committees of the Australian Transport Advisory Council; federal, state, and local government; and private agencies in developing highway safety policies are broadly outlined. Parliamentary responsibilities are excluded. It is concluded that there is a shortage of fulltime effort in the functions of development, improvement, and application of highway safety programs in all jurisdictions.
HS-013 365

ROAD SAFETY PROBLEMS AND ACTION PROGRAMMES--THE U. S. APPROACH

Insurance Inst. for Hwy. Safety, Washington, D.C.
W. Haddon, Jr. 1972 refs
In HS-013 337

Highway Safety Act of 1966, National Traffic and Motor Vehicle Safety Act of 1966, Vehicle safety standards, Highway safety standards, Highway safety programs, Safety research, Injury research, Injury prevention, Accident prevention, Damage prevention, United States, Federal role, State action, Recall campaigns, Federal aid, Occupant protection, Priorities, Precrash phase, Crash phase, Postcrash phase

It is felt that until recently there was an almost complete absence of competent scientists and professionals in the highway safety field. Safety programs were based almost exclusively on folklore, tradition, and unsubstantiated guesswork. The development of professionalism in the highway safety field is discussed and four pioneers in safety research are mentioned. The U. S. Federal Government's role in highway safety is described and the National Traffic and Motor Vehicle Safety Act and the Highway Safety Act of 1966 are summarized. The need to view the highway safety problem as one of loss reduction and not crash prevention per se is emphasized. The framework for the transition to a loss reduction based approach in the highway safety field is presented. The Federal Motor Vehicle Standards and the Highway Safety Program Standards are included.
HS-013 398

ROAD SAFETY NEEDS, RESOURCES AND CONSTRAINTS

Australia Dept. of Shipping and Transport, Canberra
M. M. Summers 1972
In HS-013 337

Highway safety, Federal role, Australia, Highway safety programs, Interpersonal communication, Safety program effectiveness

The role of the Australian government in road safety is briefly described and road safety needs are discussed. It is concluded that there is a need for statistics to measure the effectiveness of safety programs. There is also a need for better communication between road safety experts. The development of a national approach which makes actions on road safety as direct and as effective as possible is suggested.
HS-013 405

2D. Design And Construction

THE INFLUENCE OF ORGANISATIONS WHOSE PRIMARY RESPONSIBILITY IS NOT ROAD SAFETY

Australia Commonwealth Bureau of Roads, Melbourne
H. T. Loxton 1972 10refs
In HS-013 337

Transportation planning, Consumer demand forecasting, Sociological factors, Psychological factors, Urban planning, Residential streets, Public transportation, Roadside hazards, Pole location, Trees, Highway design, Highway usage, Accident rates, Pedestrian safety, Accident prevention

Transportation is a service function with the purpose of moving people and goods which can be divided into three groups, namely, those providing service, those demanding the service (and if their demand is met, using it), and all external groups affected by the service. The role of users and external groups in highway safety is considered. Users are more concerned with travel costs and time than with safety. External groups include behavioral scientists who could assist in devising methods to channel aggression into more appropriate outlets than driving; planners, who could lay out residential streets with fewer intersections and separate pedestrians from vehicles; local governments, which authorize plans; industry and schools, which should provide adequate parking; and public transportation and joint road users, such as utilities and overhead or underground facilities, which should avoid interruption of traffic flow and construction of roadside hazards.
HS-013 366

A SURVEY OF ACCIDENTS ON SUB-STANDARD RURAL HIGHWAYS IN TASMANIA

Tasmania Public Works Dept. (Australia)
J. T. Armstrong 1972 1ref
In HS-013 337

Rural highways, Highway design speed, Design standards, Accident rates, Tasmania, Fatalities, Accident factors, Highway design, Accident analysis, Rural accidents

A sample of Tasmanian rural highways covering a wide variation in geometric standard was studied to determine if higher accident rates could be expected on roads constructed to somewhat sub-standard designs compared with others constructed full to National Association of Australian State Road Authorities standards. Each highway was divided into sections according to a driver's assessment of safe speed. The equivalent design speed for each section was estimated and the ratio of safe speed to design speed was taken as a measure of the degree to which each section of highway was sub-standard. Accident rates were then determined for each section. The results of the study indicated that the accident rate was 40% higher on highways of very low standard than on highways of higher standard. However, the fatal accident rate increased with an increase in standard. It is suggested that a reappraisal of design-speed policy be made.
HS-013 375

EFFECTS OF ROAD DESIGN ON ROAD SAFETY: A TIME FOR REVIEW?

South Australia Highways Dept.
C. J. McInnes 1972 5refs
In HS-013 337

Highway design, Design standards, Highway economic factors, Accident causes, Human factors, Safety design, Highway design speed, Sight distances, Accident prevention, Accident diagrams, South Australia, Highway characteristics

The criteria used in highway design have not changed appreciably since they were developed 20 to 30 years ago although vehicle operating conditions have changed drastically since that time. Highway design is often based on minimum standards due to lack of long range planning and a desire to reduce costs. However, optimum design is needed to provide for possible future requirements. Many accidents could be prevented by conducting in-depth before and after studies of highway sections where accidents frequently occur. An example of such a study conducted on a section of the South Main Road near Adelaide, South Australia, is included. Human factors research is necessary so that highway design can take into account the limitations of the driver.
HS-013 376

BUILDING SAFETY INTO ROADS

Australia Commonwealth Bureau of Roads, Melbourne
D. J. Delaney 1972 15refs
In HS-013 337

Highway design, Safety design, Highway engineering, Highway planning, Accident prevention, Highway improvements, Highway design speed, Pavement skid resistance, Road width, Roadside hazards, Intersections, Bridge design, Access control, Traffic control devices, Highway lighting, Benefit cost analysis, Australia

The effects of highway design improvements such as standardization of highway design speeds, road and bridge widening, limitation of access from adjoining roads, grade separation and intersection channelization, and introduction of traffic control devices and improved street lighting on accident reduction are examined. The effects of change from gravel to bitumen pavement surfaces have not been reported but improvements in skid resistance of bitumen roads have resulted in accident reduction. Returns from highway improvements are highest when improvements are selected on the basis of improving safety. Improvements at locations with high accident experience produce greater safety benefits per dollar of expenditure than improvements to long lengths of road. A systematic process for highway safety design should include study of existing conditions, establishment of standards, identification of deficiencies, evaluation of improvements, and implementation and maintenance of the warranted improvement.
HS-013 377

ROAD SAFETY AND ITS INFLUENCE ON ROAD DESIGN

New South Wales Dept. of Main Roads, Sydney (Australia)
E. F. Mullin 1972
In HS-013 337

Highway design, Rural roads, Freeways, Highway design speed, Design standards, Road curves, Sight distances, Road grades, Pavement friction, Surface drainage, Road crowns, Single vehicle accidents, Ran off road accidents, Ramps, New South Wales

The design of freeways and rural roads is discussed. The New South Wales Department of Main Roads endeavors to design each road section to match the speed at which a prudent driver will travel and not for a design speed. The speeds used for design purposes vary with the standard of horizontal alignment. The change in attitude towards road design followed field tests which proved that drivers tend to approach a horizontal curve at speeds commensurate with the curve radius, provided it is visible, and that percentile speeds of entry for each curve radius can be established. It has been found that longer sight distances are required on freeways than on rural roads; an abrupt grade change where a ramp leaves a freeway is easier to discern than a long gradual separation; horizontal curves must not be hidden by crests; and at night long sag vertical curves are required for sight distance purposes.
HS-013 379

LAND TRANSPORT SYSTEMS FOR THE FUTURE

Sydney Area Transp. Study (Australia)
For primary bibliographic entry see Fld. 4H.
HS-013 391

ENVIRONMENTAL PLANNING FOR TRAFFIC SAFETY

Western Port Regional Planning Authority (Australia)
For primary bibliographic entry see Fld. 4H.
HS-013 392

THE ENVIRONMENT

Western Australia Main Roads Dept.
D. H. Aitken 1972 12refs
In HS-013 337

Traffic engineering, Environmental planning, Traffic management, Highway design, Accident prevention, Urban areas, Traffic control, Intersections, Stop signs, Yield signs, Traffic signal coordination, Traffic signals, Pedestrian safety, Medians, Pedestrian control signals, Crosswalks, One way streets, Highway lighting, Residential streets, Benefit cost analysis, Access control, Lane width, Road width, Alignment, Road shoulder width, Road surfaces, Ran off road accidents, Single vehicle accidents, Highway improvements, Freeways, Public opinion, Accident rates, Divided highways, Roadside hazards, Channelization, Rural accidents, Australia

The need for the increased use of traffic engineering and management to obtain immediate benefits in road safety while at the same time working towards a longer term goal by building a high and lasting degree of safety into new roads is emphasized. Intersection, pedestrian, and rural single vehicle accident prevention should be stressed. Intersection safety could be improved by installing channelization and traffic signals and by obtaining public acceptance to modifying existing residential street grid systems to reduce the number of intersections. Pedestrian safety could be enhanced by better lighting and grade separation. Single vehicle ran off road accidents could be prevented by widening shoulders, installing guardrails, and encouraging light growth along the roadside. Freeways should be provided to handle a large proportion of the traffic that presently clogs road systems. Adherence to design standards, one way streets, and improved highway lighting and traffic signs will also help to prevent accidents.
HS-013 400

2E. Lighting

THE APPLICATION OF CERTAIN TRAFFIC MANAGEMENT TECHNIQUES AND THEIR EFFECT ON ROAD SAFETY

Western Australia Main Roads Dept.
For primary bibliographic entry see Fld. 2I.
HS-013 360

THE EFFECTIVENESS OF THE N.S.W. STREET LIGHTING SUBSIDY SCHEME

New South Wales Univ., Sydney (Australia)
H. J. Turner 1972 4refs
In HS-013 337

Highway lighting, Accident prevention, Lighting standards, Lighting equipment costs, Grants, Local government, New South Wales, State aid, Brightness, Accident statistics, Accident costs, County government, Day vs night accidents

In New South Wales, decisions to install highway lighting are made by local governments, and the lighting is installed, funded, and maintained by electricity county councils. The New South Wales Streetlighting Subsidy Scheme, administered by the Electricity Authority of New South Wales provides for payments to local councils by the New South Wales Government of approximately one-quarter of the annual charge for installations which are eligible under the scheme. An equal amount is contributed by the responsible electricity county council. Thus the subsidy totals about one-half of the annual charge. Subsidized lighting must meet Australian Streetlighting Code standards. Results of a study of accident rates in New South Wales over two year periods before and after relighting of urban traffic routes indicate a 28% reduction in night time casualty accidents. Cost comparisons indicate that lighting costs are one-half or less than accidents costs saved.
HS-013 378

2H. Police Traffic Services

THE YOUNG DRIVER SEEN THROUGH THE EYES OF A POLICE OFFICER

Queensland Police Dept., Brisbane (Australia)
For primary bibliographic entry see Fld. 3D.
HS-013 370

COMPARATIVE STUDY OF BREATHALYSER LEGISLATION AND ITS EFFICIENCY

Sydney Univ. (Australia)
For primary bibliographic entry see Fld. 3A.
HS-013 386

RECOMMENDATIONS FOR DETECTION AND DETERRENCE

New South Wales Police Dept. (Australia)
For primary bibliographic entry see Fld. 3A.
HS-013 388

THE RESPECTIVE ROLE OF EDUCATION AND ENFORCEMENT

For primary bibliographic entry see Fld. 3E.
HS-013 401

2I. Traffic Control

A STUDY OF VARYING DEGREES OF SPEED LIMIT ENFORCEMENT

Queensland Police Dept., Brisbane (Australia)
R. A. Rice 1972 2refs
In HS-013 337

Speed limit effectiveness, Traffic law enforcement, Traffic law violations, Urban areas, Driver behavior, Warning signs, Rural areas, Fatality rates, Injury rates, Brisbane

If the speed limit enforcement policy operating from 1964 to 1968 had continued into 1969 and 1970 and the previous four year accident trend had been maintained into 1969 and 1970, it would not have been possible to identify the effect speed enforcement had on the Brisbane accident trend. It could justifiably have been claimed that the improvement was due to better street lighting, better roads, more traffic signals, safer motor vehicles, the point system, or some other factor. However, in 1969 and 1970 the only one of these factors missing was effective speed enforcement. Thousands of speeding motorists were detected in 1969 and 1970, but the use of radar warning signs and the absence of radar cars from the road convinced many drivers they could avoid detection for speeding offenses. Enforcement lost its deterrent effect, speed offenses increased, and serious accidents proliferated.
HS-013 343

HUMAN FACTORS IN RELATION TO INTERSECTION ACCIDENTS

Monash Univ., Clayton (Australia)
For primary bibliographic entry see Fld. 3D.
HS-013 345

TRAFFIC ENGINEERING ASPECTS OF INTERSECTION ACCIDENTS

Pak-Poy (P.G.) and Associates (Australia)
For primary bibliographic entry see Fld. 1E.
HS-013 346

A REVIEW OF INTERSECTION PRIORITY RULES

Sinclair and Knight, Sydney (Australia)
For primary bibliographic entry see Fld. 4A.
HS-013 347

AN ASSESSMENT OF MEASURES TO REDUCE PEDESTRIAN ACCIDENTS

South Australian Road Traf. Board
For primary bibliographic entry see Fld. 3K.
HS-013 348

THE EFFECT OF CO-ORDINATED TRAFFIC SIGNAL SYSTEMS ON TRAFFIC ACCIDENTS

New South Wales Dept. of Motor Transport, Sydney (Australia)
H. L. Camkin, P. R. Lowrie 1972 2refs
In HS-013 337

Traffic signal coordination, Traffic signal networks, Accident prevention, Accident research, New South Wales, Accident rates, Traffic actuated signals, Intersection collisions, Accident statistics, Benefit cost analysis, Accident types, Arterial streets, Traffic signal effectiveness

The accident experience of three arterial road systems controlled by coordinated signals--the Paramatta Road System, the New South Head Road System, and the Crown Street System--was studied. Accident statistics for a nine month period preceding installation of the coordinated signal systems were compared with statistics for a nine month after period. Accident statistics for corresponding periods in the local government areas embracing the systems were used as control data. The study showed conclusively that the substantial expenditures associated with coordinated signalling systems can be attended by equally substantial reductions in accidents, to the extent that quite high annual rates of return on the investment by accident savings alone, are indicated. Traffic signal coordination also pays dividends in the substantial reduction of accidents even away from the points of actual control.
HS-013 358

THE USE OF GIVE WAY SIGNS AND ROAD MARKINGS AT INTERSECTIONS

Tasmania Transport Commission (Australia)
E. J. Bradford, J. James 1972 4refs
In HS-013 337

Yield signs, Pavement markings, Tasmania, Sign effectiveness, Intersection collisions, Accident research, Accident rates, Property damage accidents, Accident costs, Road width, Mathematical analysis, Accident risk forecasting, Accident prevention, Accident statistics, Chi square test, Accident types, Traffic volume, Driver behavior, Speed, Hobart (Australia)

Studies were carried out in relation to the variations in traffic accidents subsequent to traffic management changes in Regent Street: when yield signs were erected; when transverse road markings were installed to reinforce the yield signs; and when yield signs were erected and reinforced by transverse road markings. The Tasmanian studies confirm the benefit in using road markings to supplement yield signs along a sub-arterial street. An increase in accidents and related costs following erection of signs was reversed when markings were added. Street widths apparently influenced accident rates; the wider the intersecting street in relation to Regent Street, the priority route, the greater the accident rate.
HS-013 359

THE APPLICATION OF CERTAIN TRAFFIC MANAGEMENT TECHNIQUES AND THEIR EFFECT ON ROAD SAFETY

Western Australia Main Roads Dept.
B. V. Pegrum 1972
In HS-013 337

Traffic management, Pedestrian crossings, Floodlamps, Perth (Australia), Accident prevention, Pedestrian accidents, Street lighting, Sodium lamps, Lighting equipment costs, Accident statistics, Stop signs, Sign effectiveness, Intersection collisions, Pedestrian control signals, Traffic signal timing, Traffic volume, Traffic control warrants, Sign warrants, Accident types, Accident severity

The effectiveness of three traffic management techniques employed in Perth was studied by analysis of before and after accident rates at the treated sites. The two year before and after accident experience of 63 pedestrian crossings with floodlamps showed a 60% decrease in pedestrian accidents at night. A one year before and two years after study indicated up to 70% decrease in right-angle collisions and injury accidents at 50 intersections provided with stop signs on the basis of a traffic engineering warrant. The incorporation of a third exclusive walk phase in simple two-phase signal control at central city intersections resulted in a substantial reduction in pedestrian accidents at the intersections concerned without loss of street capacity.
HS-013 360

THE RELATIONSHIP OF TRAFFIC SIGNALS TO ROAD ACCIDENTS

Queensland Main Roads Dept. (Australia)
For primary bibliographic entry see Fld. 1C.
HS-013 361

THE ENVIRONMENT

Western Australia Main Roads Dept.
For primary bibliographic entry see Fld. 2D.
HS-013 400

3. HUMAN FACTORS

A REPORT OF DISCUSSIONS. A COMPANION TO PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12282P

Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Highway safety, Accident prevention, Injury prevention, Accident research, Pedestrian safety, Motorcycle safety, Bicycle safety, Drinking drivers, Traffic management, Traffic law enforcement, Intersection collisions, Emergency medical services, Highway safety organizations, Young adult drivers, Adolescent drivers, Highway design, Vehicle design, Alcohol usage deterrents, Driver education, Safety campaigns, Australia, Transportation planning, Land usage planning

Commentaries are given on papers presented at the conference and discussions which occurred at the end of each session are reported. Major topics covered at the conference were accident information--present knowledge and future needs; traffic law enforcement; intersection accidents; pedestrians, motorcyclists, and cyclists; the alcohol problem; traffic management techniques; emergency rescue services; institutional framework in which road safety operates; the young driver as a special case; effects of road design on road safety; vehicle factors; alcohol countermeasures; transportation and land usage planning; and education and publicity.
HS-013 336

PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12680P REFS

Includes HS-013 338--HS-013 405.
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Accident prevention, Accident research, Accident rates, Australia, Traffic law enforcement, Intersection collisions, Traffic management, Emergency medical services, Driver education, Highway safety organizations, Safety education, Transportation systems, Highway design, Drinking drivers, Alcohol usage deterrents, Pedestrian safety, Adolescent drivers, Young adult drivers, Safety campaigns, Vehicle design, Safety design, Occupant protection, Seat belt usage laws, Injury prevention, Motorcycle safety, Bicycle safety, Traffic control devices, Transportation planning, Benefit cost analysis, Highway safety, Land usage planning

This symposium was an integral part of a national review of the road accident situation in Australia undertaken by the Expert Group on Road Safety. The topics covered include present accident knowledge and information needs for the prevention of future accidents, traffic law enforcement, intersection collisions, pedestrians, bicyclists, motorcyclists, the alcohol problem and countermeasures, traffic management techniques, emergency rescue services; the institutional framework in which road safety operates, the young driver, highway design, vehicle factors, planning for future problems, and highway safety education and publicity.
HS-013 337

3A. Alcohol

POST-MORTEM BLOOD ALCOHOL LEVELS IN ROAD ACCIDENT VICTIMS

Queensland State Health Lab., Brisbane (Australia)
J. I. Tonge 1972 6refs
In HS-013 337

Blood alcohol levels, Drinking drivers, Alcohol blood tests, Autopsies, Fatality causes, Single vehicle accidents, Urban accidents, Rural accidents, Age factor in accidents, Driver intoxication, Queensland

Blood alcohol levels found in 1601 recorded traffic fatalities in Brisbane during 1955-71, in 152 drivers involved in single vehicle accidents, and in 359 rural and 248 metropolitan traffic victims in a two year period are studied. Of 152 single vehicle driver fatalities 64% had blood alcohol levels above 100 mg./100 ml. Evidence of irresponsible drinking was most marked in the ages 25-29 and 30-39. In rural accidents the alcohol levels are significantly higher and this is apparent in all age groups. Post-mortem blood alcohol levels are in some cases an underestimate of the true levels present at the time of the accident because, although 50% of traffic accident fatalities die within one hour, 30% survive up to 12 hours. The need for compulsory tests for alcohol in all accident cases going to hospital is stressed.
HS-013 352

BLOOD ALCOHOL CONCENTRATIONS IN DRIVERS BREATHALYSED BY POLICE IN SIX AUSTRALIAN STATES

Adelaide Univ. (Australia)
J. S. Robertson 1972 10refs
In HS-013 337

Blood alcohol levels, Alcohol breath tests, Drinking drivers, Driver age, Queensland, New South Wales, Victoria (Australia), Tasmania, South Australia, Western Australia, T test, Driver sex

Analysis of age times alcohol figures for 22,352 breathalyzed drivers in Queensland, New South Wales, Victoria, Tasmania, South Australia, and Western Australia shows that over 98% are men and at least one third are younger than 25 years. There is a second lower peak at age 40-44 years. The differences between the states are presented in tabular form. More sociological data are needed about these drinking drivers and should be collected by means of a standard questionnaire.
HS-013 353

THE PRESENCE OF ALCOHOL IN THE GENERAL DRIVING POPULATION

Australia Dept. of the Interior, Canberra
J. A. Duncan 1972 5refs
In HS-013 337

Drinking drivers, Blood alcohol levels, Driver interviews, Alcohol breath tests, Breathalyzers, Personnel, Canberra, Surveys, Public relations, Questionnaires

A survey to determine the alcohol involvement of Canberra drivers is being conducted. It will also test the short and long term effects of the introduction of breath analysis legislation. The first phase of the survey, which involved determination of driver alcohol involvement and characteristics prior to the introduction of breath analysis legislation, is described, including the pilot study sample design, interview site and vehicle selection, estimation procedures, personnel, equipment, the interview, and public relations. During the actual survey vehicles are stopped by a policeman at preselected sites and times, and an interview team member asks the driver to participate. Drivers who refuse are allowed to continue their journeys. Drivers were allocated a number and were not identifiable. Drivers were asked a series of questions and given a breathalyzer test. Breath samples were later analyzed and the reading associated with the relevant questionnaire. Results are not yet available.
HS-013 354

CHARACTERISTICS OF BREATHALYSED DRIVERS

Australian Road Res. Board, Kew
A. E. Raymond 1972 4refs
In HS-013 337

Drinking drivers, Alcohol breath tests, Breathalyzers, Male drivers, Female drivers, Driver age, Driver occupation, Driver records, Traffic law violations, Driver criminal history, Blood alcohol levels, Driver intoxication, Alcohol usage, Sydney (Australia), Brisbane, Melbourne, Driver rehabilitation, Convictions, Penalties

Studies of various sections of the population of breathalyzed drivers in Melbourne, Sydney, and Brisbane indicated that those who are apprehended and breath tested do not represent a cross section of the driving population, but differ markedly in both drinking and driving behavior. Breathalyzed drivers in the study were almost all males. About one third were under 25 years of age and 70% were blue collar workers. Their traffic conviction records included 10 times as many convictions for serious traffic and drunk driving offenses than the general driving population and they had about three times the rate of criminal convictions. It is concluded that if the alcohol accident problem is to be alleviated, increased attention must be directed toward driver rehabilitation, and the breathalyzer may prove a valuable device for bringing those with drinking problems into a rehabilitative setting.
HS-013 355

DRINKING AND DRIVING: SOCIOLOGICAL ASPECTS

New South Wales Dept. of Motor Transport, Sydney (Australia)
M. Henderson 1972 20refs
In HS-013 337

Drinking drivers, Sociological factors, Sydney (Australia), Alcohol usage, Attitudes, Public opinion, Blood alcohol levels, Sex factors, Age factors, Alcohol laws, Behavior

Studies of community drinking patterns in Australia and studies of drinking driving offenses and crashes are reviewed. A survey of drinking practices and attitudes was conducted in Sydney during 1968-69 among a random sample of 832 persons. Results showed that there is widespread heaving drinking in the general Sydney population and heavy drinking for men is socially acceptable and even encouraged. A survey was undertaken of a random sample of the Sydney population in 1971 in order to determine drinking and driving practices and attitudes. Interviews were conducted with 1196 male and female respondents. Some preliminary data from this survey is discussed. It is concluded that a great deal of research in the social sciences is urgently required in order to prepare a foundation for the planning of alcohol countermeasures based on behavioral control. Important differences in customs and attitudes relating to both driving and drinking cannot be disregarded.
HS-013 356

ALCOHOL AND THE YOUNG DRIVER

Victoria Office of the Police Surgeon, Melbourne (Australia)
J. H. W. Birrell 1972 7refs
In HS-013 337

Drinking drivers, Adolescent drivers, Young adult drivers, Male drivers, Age factor in accidents, Blood alcohol levels, Alcohol education, Sociological factors, Alcohol usage deterrents

Results of accident studies indicate that young male drivers are over-represented in road accidents. The part alcohol plays in this high accident rate is discussed and factors which contribute to the problem of drinking and driving among young men in Australia are identified. Suggestions for dealing with the alcohol problem in relation to the young driver include development of an extensive alcohol education program; use of blood alcohol level as a screening test--those drivers found in antisocial situations with levels of .15% would be delicensed and assessed for problems and possible treatment and/or education; and setting up a system to collect and collate mortuary and hospital based blood alcohol levels categorized according to type of crash and accident responsibility. It is also recommended that an assessment of the value of separating the driver license age from the legal drinking age in Australia be undertaken.
HS-013 357

TRAFFIC LAW AND ROAD SAFETY RESEARCH IN THE UNITED KINGDOM--BRITISH COUNTERMEASURES

England Ministry of Transport, London; Transport and Road Res. Lab., Crowthorne (England)
K. Beaumont, R. F. Newby 1972 23refs
In HS-013 337

Traffic laws, Safety research, Drinking drivers, Road Safety Act of 1967 (Great Britain), Blood alcohol levels, Alcohol breath tests, Law enforcement, Implied consent laws, Drinking driver evidence, Penalties, Accident rates, Accident preven-

tion, Alcohol usage, Police law enforcement responsibilities, Advertising, Alcohol usage deterrents, Fatality rates, Time factors, Drug effects, Great Britain

The history of British alcohol laws and the evidence which led to the legal blood alcohol level limit of 80 mg./100 ml. being prescribed by the Road Safety Act of 1967 are reviewed. Sudden improvements coinciding with the Act, including greater reductions in casualties at drinking times and on weekends than at other times, the decrease in blood alcohol levels of those killed from 25% with over 80 mg./100 ml. to 15% during the 10 months following the legislation, and the marked drop in the otherwise steadily declining casualty rate, point to the reduction in driving after drinking due to the act as the main reason for the change. These changes occurred with no diminution in traffic volume or alcohol consumption. The effect of the new law (and its associated publicity and enforcement) appears to have declined after the first year of operation. Other drugs may have serious effects on driving ability.
HS-013 368

THE OPTIMUM AGE FOR DRIVER LICENSING

Australian Road Res. Board, Kew
For primary bibliographic entry see Fld. 3F.
HS-013 374

COMPARATIVE STUDY OF BREATHALYSER LEGISLATION AND ITS EFFICIENCY

Sydney Univ. (Australia)
P. G. Ward 1972 12refs
In HS-013 337

Alcohol laws, Drinking drivers, Blood alcohol levels, Alcohol usage deterrents, Police law enforcement responsibilities, Penalties, Police power, Alcohol blood tests, Alcohol breath tests, International factors

The use of subjective and objective alcohol tests, permissible blood alcohol levels for drivers, alcohol law enforcement rates, police power and the detection of offenders, penalties imposed for driving under the influence, and the efficacy of alcohol legislation in various countries are reviewed in an attempt to relate this information to Australian conditions. It has been found to be impossible to conclusively compare the relative efficiency of the various legislative systems without estimating the number of potential offenders by random road tests and routinely giving alcohol blood tests to drivers involved in accidents. It is recommended that changes in enforcement practices by random testing may be more effective than changes in penalties; special legislation for those convicted of driving with a blood alcohol level over .15% be considered; and experimental procedures, such as swapping magistrates or randomly allocating equally severe sentences of different types, be introduced into the sentencing process.
HS-013 386

A MECHANICAL DEVICE FOR PREVENTING THE DRINKING DRIVER FROM STARTING A VEHICLE

General Motors--Holden's Pty. Ltd., Melbourne (Australia)
C. A. Paterson 1972 21refs
Includes SAE-720136, 'Vehicle Countermeasures for Intoxicated Drivers,' by T. O. Jones, General Motors Corp.
In HS-013 337

Alcohol detection and interlock systems, Accident prevention, Blood alcohol levels, Driver intoxication, Drinking drivers, Alcohol breath tests, Driver performance, Performance tests, Mathematical analysis, Regression analysis, Least squares method, Test volunteers, Breathalyzers, Michigan, Phystester

A Society of Automotive Engineers paper, 'Vehicle Countermeasures for Intoxicated Drivers,' is presented which advocates alcohol detection and interlock systems as the most effective means for removing intoxicated drivers from the highway. General Motors Corp. has developed a Phystester keyboard detection and interlock system which tests driver reaction time. The test may be bypassed by an override switch which activates the vehicle's warning flashers. The Phystester was tested with 60% effectiveness on a representative sample of the driving population which included subjects of median driving age and IQ, low mentality, high manual dexterity, and heavy drinkers. Subjects with varying blood alcohol levels were tested, data were mathematically analyzed, and fleet tests of the Phystester are planned Problems of stalling, test avoidance, help from another party, cost, and allocation of interlock systems to drivers guilty of major or repeated violations are discussed. Results of Michigan's 1970 and 1971 breath testing program are included.
HS-013 387

RECOMMENDATIONS FOR DETECTION AND DETERRENCE

New South Wales Police Dept. (Australia)
A. W. Douglas 1972 4refs
In HS-013 337

Alcohol usage deterrents, Drinking drivers, Driver intoxication, Alcoholism, Alcohol laws, Alcohol education, Alcohol breath tests, Blood alcohol levels, Breathalyzers, Police law enforcement responsibilities, Penalties

In the field, detection of intoxicated drivers is usually achieved as a result of attention being drawn to the actions of a driver either by personal observation, the receipt of advice or complaints from other drivers, or as the result of a call to the scene of an accident. There is, however, a growing demand for power to subject the drivers of motor vehicles upon public streets to breath tests/analyses at any time at the discretion of a policeman. Suggested alcohol usage deterrents include alcohol education; knowledge of alcohol laws by drivers; penalties such as imposition of minimum disqualification periods for convictions, short terms of imprisonment, and revocation of an alcoholic's license until cleared medically; prohibition of the carrying of liquor under certain circumstances; prohibition of alcohol consumption in motor vehicles; requiring repeat violators to produce medical evidence to justify re-issue of licenses; medical treatment; unrestricted breath tests; and police surveillance of liquor outlets.
HS-013 388

RANDOM TESTS AND HOSPITAL TESTS FOR BLOOD ALCOHOL LEVELS

Victoria Road Safety and Traf. Authority (Australia)
G. Brown 1972 12refs
In HS-013 337

Alcohol breath tests, Alcohol laws, Drinking drivers, Blood alcohol levels, Police law enforcement responsibilities, Alcoholism, Drinking driver evidence, Medical ethics

Driving after drinking to excess is so prevalent that public opinion supports more restrictive legislation. Control and supervision of drinking drivers could be improved by the introduction of random testing at the roadside or in hospitals conditional on the public being adequately prepared to accept this as a routine investigation and not necessarily implying suspected insobriety. Physicians may be deterred from arranging for blood alcohol level estimations, which are desirable for diagnostic and/or therapeutic purposes in complete medical management, because of the legal problem involved in violating the doctor patient relationship.
HS-013 389

A REVIEW OF CLINICAL METHODS FOR THE TREATMENT OF DRINKING DRIVERS

Saint Vincent's Hosp., Melbourne (Australia)
J. N. Santamaria 1972
In HS-013 337

Drinking drivers, Alcoholism, Alcohol usage, Psychological factors, Sociological factors

The daily intake of 80-100 grams of alcohol may eventually result in toxic damage to organs and to the development of psychosocial problems, whereas a single bout of heavy drinking frequently causes acute disturbances of behavior and invariably impairment of driving skills. Whether apprehended drinking drivers are problem or social drinkers can only be determined by a competent assessment unit which should then suggest the nature of management for each convicted drinking driver. Alcohol laws may discourage social drinkers and remove problem drinkers from the roads, but they will not correct the the alcoholic's abnormal drinking behavior. A physician, psychiatrist, social worker, chaplain, employment officer, work supervisor, and others may be involved in treating the alcoholic. Community ambivalence towards drinking must be overcome, and alcohol education must be made available for young drivers and for drivers convicted of driving under the influence.
HS-013 390

THE ALCOHOL PROBLEM

Monash Univ., Clayton (Australia)
B. S. Hetzel 1972 31refs
In HS-013 337

Alcohol usage, Drinking drivers, Alcoholism, Blood alcohol levels, Alcohol usage deterrents, Sociological factors, Sex factors, Age factors, Psychological factors, Alcohol education, Public information programs, Australia, Community support, Alcohol laws

The number of road accidents is closely related to the high level of alcohol consumption in Australia. A fall in road accidents will occur if alcohol consumption is reduced. This reduction can be achieved by alcohol laws, research, improved health and welfare services, and by a social approach involving better alcohol education and stricter control of advertising. A national foundation is required to increase awareness of the dangers of the high level of alcohol consumption in Australia today.
HS-013 402

3B. Anthropomorphic Data

HSRI TWO-DIMENSIONAL CRASH VICTIM SIMULATOR: ANALYSIS, VERIFICATION, AND USERS' MANUAL. REVISION NO. 1. FINAL REPORT

Michigan Univ., Ann Arbor
D. H. Robbins, R. O. Bennett, V. L. Roberts 1973 540p 33refs
Contract DOT-HS-013-2-499
Report for 5 Jul-4 Oct 1972.
NTIS

Occupant kinematics, Computerized simulation, Mathematical models, Occupant vehicle interface, Occupant protection, Manuals, Human body segment parameters, Equations of motion, Deformation, Loading (mechanical), Seat cushions, Joints (anatomy), Seat belts, Shoulder harnesses, Three point restraint systems, Impact sleds, Acceleration response, Impact tests, Human body center of gravity, Human body mass moment of inertia, Deflection, Computer printouts, Impact velocity, Computer programs, Flow charts, Dictionaries, Front end impact tests, Rear end impact tests

A mathematical model was developed and used for the simulation of automobile occupant kinematics in a collision. This model was developed as a tool to study advanced concepts and designs of seat restraint systems from the viewpoint of occupant protection. After a discussion of the state of the art of mathematical modeling of the crash victim, an analytical description of the Highway Safety Research Institute Two-Dimensional Crash Victim Simulator is presented. This model consists of a segmented, eight-mass dynamic model of a human interacting with the vehicle interior in a symmetric frontal or rear crash. The degree to which predictions of the model agree with experimental impact sled test data is presented, followed by a detailed Users' Manual for those individuals desiring to exercise the model. Sample data sets, computer output, a description of the program including subroutine flow diagrams, and a program source listing are included.
HS-800 849

AN EVALUATION OF THE PERFORMANCE CHARACTERISTICS OF ANTHROPOMORPHIC TEST DEVICES. VOL. 1. FINAL REPORT

Cornell Aeronautical Lab., Inc., Buffalo, N.Y.
R. A. Piziali 1973 172p 29refs Rept. No. FA-5018-V-1
Contract DOT-HS-053-1-129
Report for 21 Jun 1971-27 Oct 1972.
NTIS

Anthropomorphic dummies, Barrier collision tests, Performance tests, Restraint system tests, Acceleration response, Impact sleds, Measuring instruments, Data acquisition, Data reduction, Four point restraint systems, Seat belts, Air bag restraint systems, Webbing, Human body mass, Human body segment parameters, Human body center of gravity, Human body center of mass, Human body mass moment of inertia, Pendulum tests, Drop tests, Severity indexes, Femurs, Accelerometers, Impact velocity, Head impact tolerances, Head forms, Neck motion range, Chest impact tolerances, Data analysis, Test reproducibility, Variance analysis, Loads (forces), Low speed impact tests

The vehicle crash environment of a 30 mph barrier collision was simulated on a HYGE accelerator sled test facility. Two Alderson VIP-50A and two Sierra 292-1050 dummies were each sub-

jected to three replicate tests in each of four sled test configurations designed to be representative of occupant crash environments and restraint systems likely to be encountered in initial vehicle compliance testing, and in a configuration developed by the National Bureau of Standards (NBS strap test). Mean values of the performance measures for the two makes of dummies were found to be significantly different in three of the four test configurations representing typical restraint conditions.
HS-800 869

3C. Cyclists

AN ASSESSMENT OF MEASURES TO REDUCE CYCLIST AND MOTOR CYCLIST ACCIDENTS

New South Wales Dept. of Motor Transport, Sydney (Australia)
For primary bibliographic entry see Fld. 5C.
HS-013 351

3D. Driver Behavior

HUMAN FACTORS IN RELATION TO INTERSECTION ACCIDENTS

Monash Univ., Clayton (Australia)
R. W. Cumming 1972 6refs
In HS-013 337

Traffic engineering, Intersection collisions, Human factors, Driving task analysis, Uncontrolled intersections, Right of way (traffic rules), Traffic laws, Rule making, Traffic control, Australia, Driver performance under stress, Loading (operator performance), Accident prevention, Signalized intersections, Stop signs, Yield signs

Human factors at intersections are analyzed with respect to the various rules for intersection behavior, known human capabilities and limitations, and factors known to be relevant to accidents or their prevention. It is concluded that from human factors considerations rules involving intersection priority determined by others should be higher in the hierarchy than rules involving driver-determined priorities. Such a change would simplify the driver's task and would encourage positive rather than negative use of traffic engineering measures. It is recommended that the meaning of the stop sign be changed to the international meaning of stop and give way and that a complementary sign be used with give way and stop signs to indicate to drivers on the intersecting road that they have priority. This overall approach would allow traffic engineers to continue the progressive exercise of control for capacity reasons with optimum benefit from expenditure on signs and signals and would reduce uncertainty, ambiguity and driver stress.
HS-013 345

CHARACTERISTICS OF BREATHALYSED DRIVERS

Australian Road Res. Board, Kew
For primary bibliographic entry see Fld. 3A.
HS-013 355

THE YOUNG DRIVER SEEN THROUGH THE EYES OF A MAGISTRATE

Canberra Office of the Stipendiary Magistrate (Australia)
K. T. Dobson 1972
In HS-013 337

Young adult drivers, Adolescent drivers, Traffic law violations, Driver behavior, Driver personality, Reckless driving, Penalties, Court decisions, Driver records, Driver attitudes, Traffic law enforcement

The young driver has a noticeable advantage over the more elderly driver because youth carries with it physical benefits. However, youth also carries with it certain factors that are not acceptable when they exhibit themselves in drivers of motor vehicles--such things as impatience, selfishness, a certain amount of willfulness, an inability to appreciate danger, and a desire to attract attention to himself--traits that lead to carnage on the road with respect to the 17-25 years group. Examples of traffic law violations generated by these traits are given. Factors which influence penalties for traffic law violations are outlined. The same factors apply to penalties given to the young driver as to other drivers. The attitude of young drivers to law enforcement is also briefly discussed.
HS-013 369

THE YOUNG DRIVER SEEN THROUGH THE EYES OF A POLICE OFFICER

Queensland Police Dept., Brisbane (Australia)
E. Robinson 1972
In HS-013 337

Young adult drivers, Adolescent drivers, Police motorist contacts, Driver attitudes, Traffic law enforcement, Driver behavior, Male drivers, Risk taking, Public opinion, Driver experience

The young driver has to face many problems. Lack of experience, a breakdown in self discipline aggravated by immaturity, and a misguided public attitude towards driving rank high on the list. The young driver needs to be and can be assisted in dealing with his problems. One method is to change the behavior of the older driver and create a situation where bad driving behavior is socially unacceptable. General acceptance of the motor vehicle as a lethal weapon if not properly used, and of the fact that the traffic laws are made not as a means of unnecessarily restricting a driver but as a means of ensuring the life and safety of persons using the roads, would be a move in the right direction. Against this background many of the problems of the young driver may be completely eliminated or at least greatly reduced. No enforcement authority can effectively achieve these goals without community support.
HS-013 370

THE YOUNG DRIVER SEEN THROUGH THE EYES OF A HEADMASTER

Maryvale High School, Morwell (Australia)
D. Schapper 1972
In HS-013 337

Adolescent drivers, Psychological factors, Adolescents, Sociological factors, Males, Automobile cultural role, Behavior

The frustrations of the young are depicted and explained. It is suggested that the car becomes a symbol and substitute for adult fulfillment to an extent that is inevitably dangerous.
HS-013 371

THE YOUNG DRIVER SEEN THROUGH THE EYES OF A PSYCHIATRIST

Victoria Mental Health Authority, Melbourne (Australia)
J. M. Fielding 1972 5refs

In HS-013 337

Young adult drivers, Adolescent drivers, Psychological factors, Driver behavior, Driver attitudes, Driver motivation, Adolescents, Automobile cultural role, Aggression, Driver personality, Parent child relations

Aspects of the behavior, attitudes, and motivations of young persons are discussed, especially as they relate to road safety. The relationship of the young driver to his car is studied by looking at the car as a symbol of his striving for independence, sexual potency, and the control of aggression.
HS-013 372

THE YOUNG DRIVER SEEN THROUGH THE EYES OF A YOUNG DRIVER

Sydney Univ. (Australia)
P. J. Dunn 1972 12refs
In HS-013 337

Adolescent drivers, Young adult drivers, Age factor in driving, Driver behavior, Risk taking, Traffic law violations, Drinking drivers, Adolescent conduct codes, Driver experience

Drivers aged 17-25 may have poorer driving records than the general population because of lack of experience, peer group pressure which encourages risk taking behavior, experimentation with alcohol, and police discrimination. Young drivers are not able to cope successfully with driving situations in which they have not been instructed or for which they are not tested. It is only with experience of individual danger situations that the driver comes to react automatically in the right way for each situation. Those who voluntarily take driver education courses are a better risk group even before they take the course. The most important criticism of these courses is that they are apparently only effective in changing surface safety attitudes but do not alter actual performance on the road. The young driver's habit of speeding is noticeable to the public, and speeding is seen as a main cause of the road problem. Therefore, the young driver is often blamed for the greater part of the road problem.
HS-013 373

THE RESPECTIVE ROLE OF EDUCATION AND ENFORCEMENT

For primary bibliographic entry see Fld. 3E.
HS-013 401

THE YOUNG DRIVER

New South Wales Dept. of Motor Transport, Sydney (Australia)
J. M. Henderson 1972 30refs
In HS-013 337

Adolescent drivers, Young adult drivers, Age factor in driving, Sex factor in driving, High risk drivers, Sociological factors, Driver behavior, Drinking drivers, Alcohol effects, Driver mileage, Accident risk forecasting, Driver license restrictions, High powered automobiles, Vehicle age, Motorcycle safety, Safety education, Driver education, Mass media, Traffic law enforcement, Australia

Violent deaths among young people between the ages of 17 and 20 now occur predominantly in association with automobile use. More young men than young women are killed. Options for control lie either in reduction of the present mobility of the young, perhaps through driver license restrictions and higher insurance rates, or in reduction of the special risks to which they may be liable by means of traffic safety education and traffic law enforcement. The effects of mass media and vehicle age and power on the behavior and accident rates of young drivers should be investigated.
HS-013 403

LOOKING TO THE FUTURE

Australia National Capital Devel. Commission, Canberra
For primary bibliographic entry see Fld. 4H.
HS-013 404

3E. Driver Education

ROAD SAFETY EDUCATION IN SCHOOLS

Western Australia Office of the Director General of Education
H. W. Dettman 1972
In HS-013 337

Safety education, Classroom driver instruction, Behind the wheel instruction, High school driving courses, Curricula, Western Australia, Driver attitudes

An ideal highway safety and driver education program for schools should begin at kindergarten and early primary school level, inculating a respect for the potential hazards of the highway and for the need for responsible behavior when traveling in a motor vehicle. The program should progress to pedestrian and bicycle safety until early high school. At this level healthy and cooperative attitudes and a knowledge of the transportation system and factors affecting it should be developed. Wherever practicable this phase should be concluded with some practical driving instruction under school supervision. By May 1970 driver education courses had been established in most Western Australia high schools. Driver education teacher training is available, and driving instruction is provided for students who leave school before reaching the age at which they can obtain a learner's permit.
HS-013 394

THE EFFECTIVENESS OF DRIVER TRAINING

National Safety Council of Western Australia, Mt. Lawley
J. B. Boulton 1972 14refs
In HS-013 337

Driver education evaluation, Driver education standards, Classroom driver instruction, Behind the wheel instruction

Analysis of driver education for the purposes of cost effectiveness evaluation is a self-defeating exercise. Continuing research is needed in all areas of traffic safety including driver behavior and must be communicated to those road users which it concerns. Driver education has so far been spread too thinly and received lukewarm acceptance. Driver education to be effective must be thorough and applied by qualified teachers. Theoretical and practical driver education must be available in all schools. Methods of motivating people to participate conscientiously in driver preparation must be developed. A uniform standard of driving must be established which can be regarded as the criterion by which competency can be measured. A minimum course of driver training should be established and required as a prerequisite to a driving test.
HS-013 395

THE DEVELOPMENT OF DEFENSIVE DRIVING COURSES IN QUEENSLAND

Queensland Road Safety Council (Australia)

N. F. Kent 1972
In HS-013 337

Driver education, Defensive driving, Queensland, Curricula, Surveys, Public opinion

Defensive driving courses are an expanding international driver training program. The introduction and development of a defensive driving course in Queensland, Australia, is discussed. The content and method of operation of the Queensland course, which is based on the U. S. National Safety Council's defensive driving course, are briefly described. A survey of 463 program participants indicated that the 17-20 age group predominated in course attendance; students' occupations extended over the complete range; 84% of the males and 96% of the females already had driver licenses; 90% of the males and 94% of the females considered the course good; and the remainder considered it to be average.
HS-013 396

THE RESPECTIVE ROLE OF EDUCATION AND ENFORCEMENT

J. Darling 1972
In HS-013 337

Driver behavior, Accident prevention, Driver education, Traffic law enforcement, Public information programs, Safety education, Australia

Education and enforcement must rely on each other for maximum effectiveness to be successful in their role in helping reduce Australia's road toll. Driver education, safety education, and public information programs are, on their own, only partially effective. When they fail, governments must fall back on law enforcement. But enforcement requires education to make it acceptable.
HS-013 401

THE YOUNG DRIVER

New South Wales Dept. of Motor Transport, Sydney (Australia)
For primary bibliographic entry see Fld. 3D.
HS-013 403

3F. Driver Licensing

THE OPTIMUM AGE FOR DRIVER LICENSING

Australian Road Res. Board, Kew
C. Cameron 1972 9refs
In HS-013 337

Driver licensing, Driver age, Age factor in driving, Accident rates, Age factor in accidents, Driver experience, Australia, Alcohol effects, Alcohol laws, Driver license laws

In Australia, the minimum licensing age varies from 16 years in South Australia, to 18 years in Victoria. The other States and the Australian Capital Territory grant licenses at 17 years of age. Thus determination of an optimum age for driver licensing reduces in practice to a choice from the three alternatives of 16, 17, or 18 years. The evidence suggests that 16 years is likely to prove the best choice. Drivers of 16 are no more dangerous than drivers of 17 and 18 and those who begin driving at 16 appear to develop safe driving habits at an earlier age than those who begin driving at 17 or 18 years. An important secondary advantage of the lower licensing age is a more effective separation of drinking and driving during the period when driving habits are not fully developed. The legal drinking age in all Australian States except Queensland and Tasmania is 18.
HS-013 374

CONTROL OF DRIVER LICENSING

South Australia Motor Vehicles Dept.
G. C. Strutton 1972
In HS-013 337

Driver licensing, Unlicensed drivers, Driver identification, Driver physical fitness, Driver mental fitness, Driver license examination, Driver license laws, Law enforcement, Driver fitness compulsory reporting laws, Physicians and highway safety, Point systems, Aged drivers, South Australia

The driving of vehicles by disqualified, unlicensed, and unfit drivers is a sufficiently dangerous problem in South Australia to warrant employment of additional manpower to increase the chances of detection and the imposition of sufficiently effective penalties. Drivers should be required to carry and produce their licenses on demand as an aid to positive identification and detection. It is neither feasible nor practicable to require medical examinations of all drivers. Thus, it is suggested that physicians be legally required to report medically unfit drivers to the Registrar of Motor Vehicles. Practical driver tests have the advantage of creating in the prospective licensee an awareness of an obligation to meet a standard, but they fail to expose drivers to emergency situations or to measure driver attitudes. In Australia demerit point systems suffer in that there is no formal exchange of information between states on the commission of offenses.
HS-013 384

THE YOUNG DRIVER

New South Wales Dept. of Motor Transport, Sydney (Australia)
For primary bibliographic entry see Fld. 3D.
HS-013 403

3K. Pedestrians

AN ASSESSMENT OF MEASURES TO REDUCE PEDESTRIAN ACCIDENTS

South Australian Road Traf. Board
J. D. Crinion 1972 12refs
In HS-013 337

Pedestrian safety, Pedestrian accidents, Accident analysis, Pedestrian behavior, Accident prevention, Warning signs, Sign effectiveness, Road islands, Medians, Safety zones, Zebra crossings, Pedestrian control signals, Driver behavior, Grade separation, Pedestrian bridges, Underpasses, Malls, School crossing protection, Traffic control warrants, Child pedestrians, Accident factors, Accident statistics, Pedestrian injuries, Pedestrian age, Accident location, Time of accidents, South Australia, Drinking pedestrians, Aged pedestrians, Pedestrian education, Pedestrian visibility, Street lighting, Land usage planning, Accident responsibility, Pedestrian fatalities

Pedestrian protection devices include warning signs, media refuges, zebra crossings, pedestrian operated traffic signals, and grade separation facilities. Each type of device is described and its effectiveness as a protection measure is evaluated. School crossing protection is also discussed. Available accident data from the South Australian Road Traffic Board statistics are analyzed to provide a broad picture of the relationship between pedestrian accidents and other road accidents in the State. Specific characteristics of pedestrian accidents are discussed and recommendations are made for long and short

term programs to improve pedestrian safety. The major recommendation of the report is that all activity with respect to pedestrian safety be oriented to the ultimate total separation of pedestrian and vehicular traffic.
HS-013 348

A STUDY OF MEASURES TO REDUCE INJURIES TO PEDESTRIANS

New South Wales Dept. of Motor Transport, Sydney (Australia)
For primary bibliographic entry see Fld. 1B.
HS-013 349

CAR SHAPE AND PEDESTRIAN INJURY

Harvard School of Public Health, Boston, Mass.
A. J. McLean 1972 19refs
In HS-013 337

Pedestrian injuries, Pedestrian vehicle interface, Vehicle pedestrian collisions, Front structures, Automobile design, Injury causes, Accident analysis, New York (State), Cadillacs, Volkswagens, Injury severity, Injury severity index, Pedestrian fatalities, Impact velocity, Injury prevention, Front end collisions, Pedestrian age, Pedestrian sex, Injury rates, Fatality rates, Questionnaires

A study was conducted to examine the nature and severity of pedestrian injuries sustained through impact with vehicles having two widely differing frontal designs. Pedestrian accidents which occurred in New York State from August 1969 through July 1970, involving front end collisions with Volkswagens or Cadillacs, were analyzed. The various stages of analysis are described and the injury severity scale used to rank pedestrian injuries is presented. It was concluded that a pedestrian is more likely to be killed if he is struck by the front of a Cadillac rather than by a Volkswagen. At lower injury severity levels the difference in pedestrian injury performance is less marked, but in each grouping of injury severities tested the Cadillac appeared likely to inflict more severe injuries. The data indicates that redesigning the shape of the front of Cadillacs could reduce half of the pedestrian fatalities occurring in collisions with Cadillacs.
HS-013 350

THE APPLICATION OF CERTAIN TRAFFIC MANAGEMENT TECHNIQUES AND THEIR EFFECT ON ROAD SAFETY

Western Australia Main Roads Dept.
For primary bibliographic entry see Fld. 2I.
HS-013 360

4. OTHER SAFETY-RELATED AREAS

A REPORT OF DISCUSSIONS. A COMPANION TO PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12282P
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Highway safety, Accident prevention, Injury prevention, Accident research, Pedestrian safety, Motorcycle safety, Bicycle safety, Drinking drivers, Traffic management, Traffic law enforcement, Intersection collisions, Emergency medical services, Highway safety organizations, Young adult drivers, Adolescent drivers, Highway design, Vehicle design, Alcohol usage deterrents, Driver education, Safety campaigns, Australia, Transportation planning, Land usage planning

Commentaries are given on papers presented at the conference and discussions which occurred at the end of each session are reported. Major topics covered at the conference were accident information–present knowledge and future needs; traffic law enforcement; intersection accidents; pedestrians, motorcyclists, and cyclists; the alcohol problem; traffic management techniques; emergency rescue services; institutional framework in which road safety operates; the young driver as a special case; effects of road design on road safety; vehicle factors; alcohol countermeasures; transportation and land usage planning; and education and publicity.
HS-013 336

PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12680P REFS
Includes HS-013 338--HS-013 405.
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Accident prevention, Accident research, Accident rates, Australia, Traffic law enforcement, Intersection collisions, Traffic management, Emergency medical services, Driver education, Highway safety organizations, Safety education, Transportation systems, Highway design, Drinking drivers, Alcohol usage deterrents, Pedestrian safety, Adolescent drivers, Young adult drivers, Safety campaigns, Vehicle design, Safety design, Occupant protection, Seat belt usage laws, Injury prevention, Motorcycle safety, Bicycle safety, Traffic control devices, Transportation planning, Benefit cost analysis, Highway safety, Land usage planning

This symposium was an integral part of a national review of the road accident situation in Australia undertaken by the Expert Group on Road Safety. The topics covered include present accident knowledge and information needs for the prevention of future accidents, traffic law enforcement, intersection collisions, pedestrians, bicyclists, motorcyclists, the alcohol problem and countermeasures, traffic management techniques, emergency rescue services; the institutional framework in which road safety operates, the young driver, highway design, vehicle factors, planning for future problems, and highway safety education and publicity.
HS-013 337

4A. Codes And Laws

HUMAN FACTORS IN RELATION TO INTERSECTION ACCIDENTS

Monash Univ., Clayton (Australia)
For primary bibliographic entry see Fld. 3D.
HS-013 345

A REVIEW OF INTERSECTION PRIORITY RULES

Sinclair and Knight, Sydney (Australia)
A. B. Sinclair, G. H. Harris, G. G. O'Loughlin 1972 15refs
In HS-013 337

Intersections, Traffic laws, Right of way (traffic rules), Reviews, Accident statistics, Accident prevention, Intersection collisions, Computerized simulation, Simulation models, Traffic control devices, Pedestrian safety, Traffic capacity

The main priority rules used in various parts of the world, the off-side priority rule, the near-side priority rule, and the major/minor system are described; literature on intersection priorities with particular reference to accidents is reviewed; and various operational aspects of priority rules are discussed. Because of the lack of authoritative information on intersection priority related to road safety, there is insufficient evidence to definitely state that any particular priority rule will or will not result in the lowest accident figures. Further information regarding priority rules and safety is needed. Three ways of collecting such information--examination of intersection accident statistics, computer simulation of driver behavior at intersections, and field experiments with priority roads--are discussed in detail. It is considered that the present give-way-to-the-right (off-side priority rule) should continue to be used in Australia but that some priority road systems should be introduced.
HS-013 347

TRAFFIC LAW AND ROAD SAFETY RESEARCH IN THE UNITED KINGDOM--BRITISH COUNTERMEASURES

England Ministry of Transport, London; Transport and Road Res. Lab., Crowthorne (England)
For primary bibliographic entry see Fld. 3A.
HS-013 368

COMPARATIVE STUDY OF BREATHALYSER LEGISLATION AND ITS EFFICIENCY

Sydney Univ. (Australia)
For primary bibliographic entry see Fld. 3A.
HS-013 386

4B. Community Support

THE EFFECTIVENESS OF PUBLICITY

Australia Dept. of Shipping and Transport, Canberra
R. R. Schrader 1972
In HS-013 337

Safety campaigns, Safety education, Mass media, Public information programs, Child safety education, Attitude changes, Public opinion, Seat belt campaigns, Community support

Some activities of the Public Advisory Committee on Education in Road Safety (P.A.C.E.R.S.), an advisory committee of the Australian Transport Advisory Council, are described. One of the main function of P.A.C.E.R.S. is to arrange and coordinate national road safety campaigns. Cooperation of the media in conducting safety campaigns, and problems of road safety publicists are discussed. Examples of effective safety campaigns are presented. Although it is very difficult to establish the extent of the effectiveness of road safety publicity, evidence indicates that given continuous exposure to sound information, people can be influenced to accept road safety legislation and to improve their driving behavior.
HS-013 397

THE ALCOHOL PROBLEM

Monash Univ., Clayton (Australia)
For primary bibliographic entry see Fld. 3A.
HS-013 402

ROAD SAFETY NEEDS, RESOURCES AND CONSTRAINTS

Australia Dept. of Shipping and Transport, Canberra
For primary bibliographic entry see Fld. 2.
HS-013 405

4C. Cost Effectiveness

THE EFFECT OF CO-ORDINATED TRAFFIC SIGNAL SYSTEMS ON TRAFFIC ACCIDENTS

New South Wales Dept. of Motor Transport, Sydney (Australia)
For primary bibliographic entry see Fld. 2I.
HS-013 358

DETERMINATION OF PRIORITIES

Australia Bureau of Transport Economics, Canberra
For primary bibliographic entry see Fld. 1C.
HS-013 367

BUILDING SAFETY INTO ROADS

Australia Commonwealth Bureau of Roads, Melbourne
For primary bibliographic entry see Fld. 2D.
HS-013 377

4D. Governmental Aspects

ORGANISATIONS RESPONSIBLE FOR ROAD SAFETY AND THEIR INTER-RELATIONSHIPS

Victoria Road Safety and Traf. Authority (Australia)
For primary bibliographic entry see Fld. 2.
HS-013 365

4E. Information Technology

HSRI TWO-DIMENSIONAL CRASH VICTIM SIMULATOR: ANALYSIS, VERIFICATION, AND USERS' MANUAL. REVISION NO. 1. FINAL REPORT

Michigan Univ., Ann Arbor
For primary bibliographic entry see Fld. 3B.
HS-800 849

4G. Mathematical Sciences

APPROXIMATE DYNAMIC SHIMMY RESPONSE OF PNEUMATIC TIRES

For primary bibliographic entry see Fld. 5V.
HS-013 324

LOW SHEAR VISCOMETRY AND COLD FLOW MECHANISM--ENGINE OILS

Esso Res. and Engineering Co., Linden, N. J.
For primary bibliographic entry see Fld. 5D.
HS-013 329

THE PRESENCE OF ALCOHOL IN THE GENERAL DRIVING POPULATION

Australia Dept. of the Interior, Canberra
For primary bibliographic entry see Fld. 3A.
HS-013 354

A MECHANICAL DEVICE FOR PREVENTING THE DRINKING DRIVER FROM STARTING A VEHICLE

General Motors--Holden's Pty. Ltd., Melbourne (Australia)
For primary bibliographic entry see Fld. 3A.
HS-013 387

HSRI TWO-DIMENSIONAL CRASH VICTIM SIMULATOR: ANALYSIS, VERIFICATION, AND USERS' MANUAL. REVISION NO. 1. FINAL REPORT

Michigan Univ., Ann Arbor
For primary bibliographic entry see Fld. 3B.
HS-800 849

4H. Transportation Systems

LAND TRANSPORT SYSTEMS FOR THE FUTURE

Sydney Area Transp. Study (Australia)
R. S. Nielsen 1972 10refs
In HS-013 337

Transportation planning, Urban transportation, Monorails, Air cushion vehicles, Tracked air cushion vehicles, Urbmobiles, Bus lanes, Buses, Demand scheduled buses, Transportation system capacities, Transportation system costs, Australia, Public transportation, Aerial transit systems, Freeways, Accident rates, Freeway planning

Future land transport systems including monorails, hovercraft, tracked hovercraft, aerotrains, urbmobiles, and dial-a-bus systems are described and the advantages and disadvantages and the applicability of these systems in solving Australia's urban transporation problems are discussed. It is concluded that most of these land transport systems are suitable only for intracity and not inter-urban travel. Available evidence suggests that the private automobile will continue as the prime means of transportation in Australia's urban areas. Rapid expansion and development of Australia's freeway system is recommended.
HS-013 391

ENVIRONMENTAL PLANNING FOR TRAFFIC SAFETY

Western Port Regional Planning Authority (Australia)
B. C. S. Harper 1972 16refs
In HS-013 337

Environmental planning, Land usage planning, Urban planning, Highway planning, Rural areas, Urban areas, Land usage effect on traffic generation, Business location, Highway location, Highway design, Arterial streets, Residential streets, Accident rates, Accident factors, Accident prevention, Urban development, Intersections, Australia, Sweden, Sidewalks, Malls, Bikeways, Reviews

The present state of knowledge on the relationship between the environment and traffic safety is reviewed. As an initial step in environmental planning for traffic safety, specific land usage planning principles applicable to Australian urban and rural areas are presented. It is considered that the immediate application of the suggested planning principles could effect a considerable improvement in traffic safety in urban areas to be built in Australia over the next 10 to 15 years. The Swedish National Board of Urban Planning Scaft Guidelines are included in an appendix.
HS-013 392

PLANNING THE LAND USE TRANSPORT COMPLEX TO REDUCE EXPOSURE TO ACCIDENTS

New South Wales Univ., Sydney (Australia)
W. R. Blunden 1972 5refs
In HS-013 337

Land usage planning, Transportation planning, Accident risks, Highway planning, Land usage effect on traffic generation, Accident prevention, Transfer facilities

The need for the development of theoretical foundations for road accident occurrence is discussed and attention is focused on the importance of the accident exposure factor. The implications of exposure as a means of giving explicit consideration to safety aspects in the land use transportation planning process are explored.
HS-013 393

LOOKING TO THE FUTURE

Australia National Capital Devel. Commission, Canberra
W. C. Andrews 1972 12refs
In HS-013 337

Accident prevention, Urban planning, Transportation planning, Highway planning, Urban development, Australia, Accident costs, Accident rates, Human factors, Vehicle design, Visibility, Benefit cost analysis, Driver behavior, Public transportation, Age factor in accidents

Suggestions to achieve improved traffic safety in the future, using current scientific knowledge and within economic disciplines, are made. Accent is placed on coordinated research, urban growth strategies, and highway and transportation planning procedures.
HS-013 404

5. VEHICLE SAFETY

A REPORT OF DISCUSSIONS. A COMPANION TO PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16, 1972

111972 12282P
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Highway safety, Accident prevention, Injury prevention, Accident research, Pedestrian safety, Motorcycle safety, Bicycle safety, Drinking drivers, Traffic management, Traffic law enforcement, Intersection collisions, Emergency medical services, Highway safety organizations, Young adult drivers, Adolescent drivers, Highway design, Vehicle design, Alcohol usage deterrents, Driver education, Safety campaigns, Australia, Transportation planning, Land usage planning

Commentaries are given on papers presented at the conference and discussions which occurred at the end of each session are reported. Major topics covered at the conference were accident information--present knowledge and future needs; traffic law enforcement; intersection accidents; pedestrians, motorcyclists, and cyclists; the alcohol problem; traffic management techniques; emergency rescue services; institutional framework in which road safety operates; the young driver as a special case; effects of road design on road safety; vehicle factors; alcohol countermeasures; transportation and land usage planning; and education and publicity.
HS-013 336

PAPERS PRESENTED AT THE NATIONAL ROAD SAFETY SYMPOSIUM, CANBERRA, MARCH 14-16,

1972
111972 12680P REFS
Includes HS-013 338--HS-013 405.
Corporate author, P.O. Box 367, Canberra, A.C.T. 2601

Accident prevention, Accident research, Accident rates, Australia, Traffic law enforcement, Intersection collisions, Traffic management, Emergency medical services, Driver education, Highway safety organizations, Safety education, Transportation systems, Highway design, Drinking drivers, Alcohol usage deterrents, Pedestrian safety, Adolescent drivers, Young adult drivers, Safety campaigns, Vehicle design, Safety design, Occupant protection, Seat belt usage laws, Injury prevention, Motorcycle safety, Bicycle safety, Traffic control devices, Transportation planning, Benefit cost analysis, Highway safety, Land usage planning

This symposium was an integral part of a national review of the road accident situation in Australia undertaken by the Expert Group on Road Safety. The topics covered include present accident knowledge and information needs for the prevention of future accidents, traffic law enforcement, intersection collisions, pedestrians, bicyclists, motorcyclists, the alcohol problem and countermeasures, traffic management techniques, emergency rescue services; the institutional framework in which road safety operates, the young driver, highway design, vehicle factors, planning for future problems, and highway safety education and publicity.
HS-013 337

ROAD SAFETY PROBLEMS AND ACTION PROGRAMMES--THE U. S. APPROACH
Insurance Inst. for Hwy. Safety, Washington, D.C.
For primary bibliographic entry see Fld. 2.
HS-013 398

5C. Cycles

AN ASSESSMENT OF MEASURES TO REDUCE CYCLIST AND MOTOR CYCLIST ACCIDENTS
New South Wales Dept. of Motor Transport, Sydney (Australia)
G. Messiter 1972 12refs
In HS-013 337

Accident prevention, Bicycle accidents, Motorcycle accidents, Injury prevention, Precrash phase, Crash phase, New South Wales, Accident rates, Accident factors, Age factor in accidents, Accident risks, Motorcycle safety, Helmets, Motorcycle operator education, Motorcycle visibility, Accident causes, Head lamp daytime usage, Vehicle motorcycle collisions, Motorcycle design, Bicycle safety, Motorcycle operator fatalities, Occupation

The characteristics of bicycle and motorcycle accidents in New South Wales are outlined. Precrash and crash phase countermeasures aimed at preventing these accidents or reducing accident severity are discussed and evaluated. It is recommended that daytime usage of motorcycle lamps should be increased and the case for compulsion investigated; a pilot pre-road training program for motorcyclists should be developed; the economic feasibility of the provision of antilocking brakes for motorcycles should be studied; and motorcycle manufacturers should be encouraged to develop passive restraint systems. The feasibility of controlled use of the footpath area by bicycle users should also be investigated and encouraged where possible.
HS-013 351

AN EVALUATION OF MEASURES TO REDUCE ACCIDENT OCCURRENCE
Melbourne Univ. (Australia)
For primary bibliographic entry see Fld. 5D.
HS-013 382

5D. Design

VISCOMETRY AND ITS APPLICATION TO AUTOMOTIVE LUBRICANTS
Society of Automotive Engineers, Inc., New York
R. McKay, comp., M. L. McMillan, comp., T. W. Selby, comp.
1973 129p refs Rept. No. SAE-SP-382
Sponsored by Society of Automotive Engineers, Inc. and American Society for Testing and Materials. Presented at Society of Automotive Engineers National Automobile Engineering Meeting, Detroit, 14-18 May 1973. Includes HS-013 326--HS-013 335.
SAE

Lubricants, Oils, Viscosity, Viscometers, Shear stress, Shear stability, Low temperature, Rheological properties, Oil pumps, Lubrication, Journal bearings, Engine tests, Performance tests, Cavitation, Fluid flow, Oil pressure, Films (coatings), Thickness, Polymers, Capillary columns, Laboratory tests, Multigrade oils

Papers presented at this symposium discuss the effects of low temperature and shear rates on lubrication, treating directly low temperature oil flow both to and from the oil pump, the factors involved when oils fail to be pumped, and laboratory tests to predict and measure engine oil pumpability. The effects of high shear rates on lubrication are also discussed with emphasis on shear stability--the factors involved with the use and degradation of numerous polymeric additives.
HS-013 325

THE RELATIONSHIP OF LOW-TEMPERATURE RHEOLOGY TO ENGINE OIL PUMPABILITY
General Motors Corp., Detroit, Mich.
M. L. McMillan, C. K. Murphy 1973 20refs Rept. No. SAE-730478
In HS-013 325

Rheological properties, Low temperature, Fluid flow, Lubricating oils, Viscosity, Oil pumps, Cavitation, Test equipment, Oil pressure, Viscometers, Shear stress, Yield strength, Multigrade oils, Laboratory tests

Engine oil pumping failures may occur because either the oil cannot flow under its own head to the oil screen inlet, or the oil is too viscous to flow through the screen and inlet tube fast enough to satisfy pump demands. To determine which factor is controlling, the behavior of commercial, multigrade oils was observed visually at temperatures from -40 to 0F (-40 to -17.8C) in a laboratory oil pumpability test apparatus. Test results revealed that pumping failures occur by the first alternative: a hole is formed in the oil, and the surrounding oil is unable to flow into the hole fast enough to satisfy the pump. Of 14 oils tested, seven failed to be pumped because of air binding or cavitation which developed in this manner. A model, which explains these failures in terms of yield point considerations and the low shear apparent viscosity of the oils, is proposed.
HS-013 326

PROPOSED LABORATORY METHODS FOR PREDICTING THE LOW-TEMPERATURE PUMPABILITY PROPERTIES OF CRANKCASE OILS

Gulf Res. and Devel. Co., Pittsburgh, Pa.; Paramins Labs.
R. M. Stewart, M. F. Smith, Jr. 1973 11refs Rept. No. SAE-730479
In HS-013 325

Lubricating oils, Low temperature, Fluid flow, Oil pumps, Cavitation, Laboratory tests, Viscosity, Shear stress, Viscometers, Vacuum gauges, Oil pressure, Test equipment, Rheological properties

Two critical areas of oil flow at very low temperatures are the ability of an oil to flow to the oil screen of an engine fast enough to prevent air binding and its ability to be drawn through the oil screen and pump inlet tubing without causing pump cavitation. Engine pumpability data are presented which illustrate how one of these factors may affect the other. Four bench tests using a vacuum viscometer, vacuum pipette rig, Haake Rotovis viscometer, and a pumpability simulator have been developed. Results of tests using eight engine reference oils indicate that viscosities measured in the pumpability simulator test and the Haake viscometer correlate reasonably well with the 20F engine gallery pump-up times and that vacuum pipette rig viscosities, measured at borderline engine pumping temperatures, indicate that a maximum viscosity may be found above which an oil will fail to pump.
HS-013 327

ENGINE OIL PUMPABILITY AND RELATED PROPERTIES

Shell Canada Ltd., Toronto
A. R. Nolf 1973 4refs Rept. No. SAE-730480
In HS-013 325

Lubricating oils, Fluid flow, Oil pumps, Low temperature, Viscometers, Viscosity, Laboratory tests, Oil pressure, Gear teeth, Performance tests

A bench test has been developed to simulate the ability of engine crankcase oil to flow from the sump to the pump inlet. The design of the system is geometrically equivalent to that found in a Chevrolet 230 CID L-6 engine. A number of crankcase lubricants have been evaluated in the rig to determine the effects of Viscosity Index improver chemistry, soak time, fuel diluent content, and pour point on pumping rig delivery. In a more detailed phase of this study, the cold flow properties of 10 commercial oils have been compared to pumping rig results obtained at -20 and -30F The data suggest that the Brookfield viscometer is a more reliable indicator of oil pumpability than the pour time, viscosity, or pour point.
HS-013 328

LOW SHEAR VISCOMETRY AND COLD FLOW MECHANISM--ENGINE OILS

Esso Res. and Engineering Co., Linden, N. J.
F. F. Tao, W. E. Waddey 1973 23refs Rept. No. SAE-730481
In HS-013 325

Lubricating oils, Viscosity, Viscometers, Fluid flow, Low temperature, Shear stress, Rheological properties, Regression analysis, Laboratory tests, Oil pumps, Oil lines

The viscosity-shear dependence of multiviscosity oils measured in a rotary viscometer at low shear rates fits the Power Law model, relating viscosity to shear rate. A simulated oil pan rig permitted calculation of critical shear conditions and viscosities for engine pumpability. Critical conditions of apparent viscosity and shear stress were computed from data on a series of American Society for Testing and Materials reference pumpability oils. Oil gelation can be characterized by viscometric measurements. However, the viscosity contribution of the gel structure is not considered important to pumping performance. Oils showing gel structure exhibit significantly better viscometric behavior after only very short engine service. Increasing oil soaking time at low temperatures from 16-64 hours results in more gelation with some oils, but no significant changes in viscometric behavior.
HS-013 329

SIMULATION OF SEVERE SHEAR CONDITIONS IN LUBRICATION

Georgia Inst. of Tech., Atlanta
J. Jakobsen, D. M. Sanborn, W. O. Winer 1973 12refs Rept. No. SAE-730482
In HS-013 325

Lubrication, Shear stress, Rheological properties, Lubricating oils, Simulation, Viscometers, Viscosity, Polymers, Fluid flow, Elastohydrodynamics, Oil pressure, Capillary columns, Films (coatings), Traction, Thickness

High-shear conditions in automotive lubrication applications play an important role in lubricant rheological behavior. High shear can result in viscosity reductions due to viscous heating, pseudoplastic shear thinning, and irreversible molecular degradation. Two methods of simulating high shear conditions--an elastohydrodynamic lubrication simulator and a capillary viscometer--are presented, along with data obtained from them on the film thickness-speed relation, traction-speed relation, pressure, viscosity, and flow characteristics of polymer containing oils.
HS-013 330

THE RHEOLOGY OF ASTM ARO SERIES MECHANICAL SHEAR STABILITY REFERENCE OILS

Mobil Res. and Devel. Corp., New York
J. F. Gyer 1973 24refs Rept. No. SAE-730486
In HS-013 325

Multigrade oils, Rheological properties, Shear stability, Viscosity, Viscometers, Capillary columns, Polymers, Oscillators, Field tests, Laboratory tests

Viscosities at high and low shear rates were measured before and after mechanical shear for 12 multigrade engine oils. The oils were divided into two groups by the difference between low shear rate specific viscosity at 210 and 100F The positive group suffered the greater average low shear rate permanent viscosity loss. Permanent viscosity loss at high shear rates was less than at low shear rates for both groups. In several cases, the low shear rate permanent viscosity loss was nearly equal to the new oil temporary viscosity loss. Several of these oils became nearly Newtonian after mechanical shear. Long-term storage produced measurable viscosity recovery in some sheared oils. The disruption of polymer entanglements by mechanical shear leads to the rapid initial viscosity degradation of multigrade oils. The mechanism of mechanical shear is different enough from the mechanism of sonic shear to account for the different results of the two techniques.

HS-013 331

A METHOD FOR DETERMINING THE INFLUENCE OF MULTIGRADED OILS ON JOURNAL BEARING PERFORMANCE

General Motors Res. Labs., Warren, Mich.
R. C. Rosenberg 1973 31refs Rept. No. SAE-730483
In HS-013 325

Journal bearings, Multigrade oils, Films (coatings), Polymers, Viscosity, Coefficient of friction, Engine operating conditions, Engine tests, Test equipment, Transducers, Fluid flow, Operating temperature, Thickness, Performance tests, Reviews

An experimental technique has been developed to measure the minimum oil film thickness of dynamically loaded journal bearings. Inductive transducers were used to measure the motion of the journal within the bearing clearance and with this information the relative oil film thickness was determined. The measured film thickness correlated closely with analytically predicted values for five base oils. However, tests on four oils which met the Society of Automotive Engineers multiviscosity engine oil classification showed that the low shear rate viscosity of these oils could not be used to predict the bearing oil film thickness developed by these oils.
HS-013 332

BEHAVIOR OF NON-NEWTONIAN LUBRICANTS IN HIGH SHEAR RATE APPLICATIONS

Rohm and Haas Co., Philadelphia, Pa.
R. L. Stambaugh, R. J. Kopko 1973 25refs Rept. No. SAE-730487
In HS-013 325

Lubricants, Oils, Viscosity, Oil pumps, Shear stability, Viscometers, Capillary columns, Fluid flow, Shear stress, Leakage, Polymers, Hydraulic fluids, Transmission fluids, Automatic transmissions, Engine operating conditions, Polymethacrylates, Field tests, Wear tests, Engine tests, Performance tests, Laboratory tests, Durability, Molecular weight, Operating temperature, Operating pressure, Journal bearing wear, Coefficient of friction

The role of non-Newtonian fluid characteristics in lubricant performance was studied in a variety of V.I. improved lubricants. Proper choice of V.I. improver can yield a lubricant which undergoes both small temporary and permanent viscosity losses, thus giving nearly Newtonian behavior but with high and low temperature performance advantages over straight mineral oils. In hydraulic fluids, different V.I. improvers resulted in varying amounts of internal leakage in both vane and internal gear pumps. In the case of vane pumps, the favorable Newtonian characteristics of shear-stable V.I. improvers assured outstanding pumping performance. Control of transmission leakdown was primarily responsible for the favorable influence a shear-stable V.I. improver had on the maximum transmission sump temperature at which the wide-open throttle 2-3 upshift will take place. Finally, the shear stability of the V.I. improver in engine oils was shown to influence journal wear protection provided by that oil.
HS-013 333

A BENCH SCALE ENGINE TEST FOR SHEAR STABILITY OF MULTIGRADE ENGINE OILS

Sun Oil Co., Philadelphia, Pa.
A. F. Talbot, W. A. Wright, H. I. Morris 1973 9refs Rept. No. SAE-730485
In HS-013 325

Engine tests, Shear stability, Multigrade oils, Viscosity, Polymers, Engine operating conditions, V 8 engines, Single cylinder engines, Operating temperature, Performance tests, Field tests, Linear regression analysis, Durability, Engine performance, Mechanical properties

Engine tests were developed and performed using an air cooled, four cycle, single cylinder engine of the type often found on lawn and garden equipment, driven by an electric motor at 3100 rpm. The equipment is simple, inexpensive, and requires a modest volume of sample. Results compare favorably with the shear stability tests of a series of 13 oils prepared and field tested in a 78 vehicle fleet. The degree of correlation is comparable to that observed in tests conducted in full size laboratory engine stands, and superior to that recently reported for a variety of non-engine bench tests (pump rigs, sonic oscillator, dispersion mill). Viscosity losses are also reported for a variety of commercial 10W-40 grade service station engine oils when tested by this procedure.
HS-013 334

A RATING SYSTEM FOR VISCOSITY INDEX IMPROVERS

Witco Chemical Corp., New York
J. V. Brancato, W. Hart 1973 Rept. No. SAE-730484
In HS-013 325

Viscosity, Polymers, Shear stability, Molecular weight, Multigrade oils, Low temperature, High temperature, Oil pumps, Design of experiments, Mechanical properties

A method of comparing the relative merits of various polymers in a homogeneous system of base oils that might be used in multigrade motor oil applications was developed. By using consistent test methods, comparisons between polymers can be made that more clearly define the properties of the polymers than methods that have been used in the past. In a series of polymers of the same molecular type, those polymers with the lowest molecular weight will have the greatest shear stability. The contribution to low shear, low-temperature viscosity varies widely with variations in molecular type. A rating factor can be produced which is relatively constant for polymers of the same molecular type regardless of molecular weight.
HS-013 335

CAR SHAPE AND PEDESTRIAN INJURY

Harvard School of Public Health, Boston, Mass.
For primary bibliographic entry see Fld. 3K.
HS-013 350

THE AUSTRALIAN APPROACH TO VEHICLE SAFETY

Australia Dept. of Shipping And Transport, Canberra
K. J. Cosgrove 1972
In HS-013 337

Vehicle safety standards, Australia, Design standards, Automobile safety characteristics, Safety standards compliance, Test facilities, Safety standards compliance certification, Vehicle design

The approach taken by Australia in developing and implementing vehicle safety standards is discussed and compared with the American and European systems. The motor vehicle manufacturer wishing to facilitate registration of his vehicles in Aus-

tralia conducts tests prescribed in the Australian Design Rules, in laboratories approved by the Australian Motor Vehicle Certification Board for this purpose. Reports of these tests and other necessary documentary evidence such as plans and specifications are submitted to the Vehicle Structures Safety Branch which undertakes an independent technical assessment of this documentary evidence to see whether compliance is demonstrated. The Certification Board then considers the matter and if satisfied issues to the vehicle manufacturer authority to affix compliance plates to his production of this vehicle model.
HS-013 380

VEHICLE SAFETY DESIGN--AN OVERSEAS VIEW

Volvo A. B., Goteborg (Sweden)
G. Salinger 1972 3refs
In HS-013 337

Vehicle design, Safety design, Vehicle safety standards, Vehicle inspection, Europe, United States, Government industry cooperation, Rule making, Automotive industry, Sweden, Australia

Vehicle safety design is no longer solely a matter for the vehicle manufacturer. The involvement of government in establishing vehicle safety regulations is discussed. A table comparing U. S. Federal Motor Vehicle Safety Standards, Australian Design Rules, the Economic Council for Europe regulations, Swedish rules, and Common Market directives is presented. The European automotive industry's involvement in constructing experimental safety vehicles is mentioned and Sweden's national motor vehicle inspection scheme is briefly described. It is concluded that owing to different levels of rule making ambitions world-wide coordination of safety requirements is not probable. However, continental coordination should be pursued. It is suggested that a system of dialogue between rule making agencies and industry be established to guarantee feasibility and cost effectiveness in regard to proposed measures.
HS-013 381

AN EVALUATION OF MEASURES TO REDUCE ACCIDENT OCCURRENCE

Melbourne Univ. (Australia)
E. R. Hoffmann 1972 58refs
In HS-013 337

Vehicle design, Accident factors, Reviews, Accident prevention, Accident causes, Accident studies, Vehicle performance, Weight to power ratio, Automobile power, Antiskid brakes, Tire failures, Tire tread depths, Vehicle visibility, Running lamp daytime usage, Reflectorized license plates, Automobile colors, Rear visibility, Windshield design, Mudflaps, Vehicle handling, Vehicle stability, Rollover accidents, Rear end collisions, Accident rates, Motorcycle accidents, Motorcycle safety, Articulated vehicles

Literature on vehicle design features which have a known relationship to accident occurrence is reviewed. No consideration was given to implied safety, that is, design features which if incorporated in the vehicle should improve safety, but for which there is at this time no known relation from accident statistics. The review indicates a number of areas in which improvements to vehicle design could be made in order to reduce the occurrence of accidents. These included the fitting of antiskid devices to automobiles, motorcycles, and commercial vehicles; compulsory changing of tires when tread depth reaches 1/16 inch; improvements in vehicle visibility by means of daytime running lights, light paint colors, and reflectorized surfaces; fitting of efficient mud flaps on all wheels; and it appears necessary to have legislation limiting power available on motor vehicles operated by young drivers.
HS-013 382

VEHICLE DESIGN TO REDUCE OCCUPANT INJURY

Australia Dept. of Shipping and Transport, Canberra
For primary bibliographic entry see Fld. 5N.
HS-013 383

A MECHANICAL DEVICE FOR PREVENTING THE DRINKING DRIVER FROM STARTING A VEHICLE

General Motors--Holden's Pty. Ltd., Melbourne (Australia)
For primary bibliographic entry see Fld. 3A.
HS-013 387

THE VEHICLE

Volvo A.B., Goteborg (Sweden)
G. Salinger 1972
In HS-013 337

Vehicle design, Vehicle safety, Vehicle inspection, Experimental automobiles, Safety cars, Accident prevention, Injury prevention, Vehicle safety standards, International factors, Seat belt effectiveness, Passive restraint systems, Seat belt usage

The conclusions of papers presented at the conference dealing with design factors which affect vehicle safety are summarized and evaluated in light of overseas experience. International coordination of vehicle safety regulations, restraint systems, and the value of periodic motor vehicle inspection systems are discussed and implications of the experimental safety vehicle program are examined.
HS-013 399

LOOKING TO THE FUTURE

Australia National Capital Devel. Commission, Canberra
For primary bibliographic entry see Fld. 4H.
HS-013 404

5I. Inspections

VEHICLE SAFETY DESIGN--AN OVERSEAS VIEW

Volvo A. B., Goteborg (Sweden)
For primary bibliographic entry see Fld. 5D.
HS-013 381

THE CONTROL OF UNROADWORTHY VEHICLES IN THE A.C.T.

Australia Dept. of the Interior, Canberra
L. I. Crowe 1972 12refs
In HS-013 337

Vehicle inspection, Inspection stations, Inspection procedures, Australian Capital Territory, Inspection equipment, Inspection costs, Inspection standards, Inspection effectiveness, Brake inspection, United States, Sweden

Since 1936 compulsory vehicle inspection has been a prerequisite to vehicle registration in the Australian Capital Ter-

ritory (A.C.T.). The A.C.T. inspection stations, equipment, costs, personnel, standards, and procedures are described. The American and Swedish positions on vehicle inspection are discussed. The A.C.T. experience suggests that there is an immeasurable benefit in the compulsory inspection system in that it reduces the occasion for road crashes by reducing the number of unroadworthy vehicles on the highways; by educating motorists of the need for preventive maintenance; and by encouraging a high level of performance from automotive service and repair companies.
HS-013 385

THE VEHICLE

Volvo A.B., Goteborg (Sweden)
For primary bibliographic entry see Fld. 5D.
HS-013 399

5L. Manufacturers, Distributors, And Dealers

THE AUSTRALIAN APPROACH TO VEHICLE SAFETY

Australia Dept. of Shipping And Transport, Canberra
For primary bibliographic entry see Fld. 5D.
HS-013 380

5N. Occupant Protection

DETERMINATION OF PRIORITIES

Australia Bureau of Transport Economics, Canberra
For primary bibliographic entry see Fld. 1C.
HS-013 367

VEHICLE DESIGN TO REDUCE OCCUPANT INJURY

Australia Dept. of Shipping and Transport, Canberra
A. P. Vulcan 1972 55refs
In HS-013 337

Vehicle design, Injury prevention, Occupant protection, Human body impact tolerances, Seat belt effectiveness, Stopping distance, Three point restraint systems, Integrated seats, Seat belt slack, Passive restraint systems, Passenger compartments, Automobile interior design, Injury causes, Secondary collisions, Energy absorbing steering columns, Automobile safety characteristics, Occupant vehicle interface, Safety device effectiveness, Instrument panel design, Windshield design, Tempered glass, Laminated glass, Injury severity, Windshield caused injuries, Instrument panel caused injuries, Front structure, Deformation, Crashworthy bodies, Experimental automobiles, Safety cars, Accident studies, Australia

Vehicle design factors which reduce the extent and severity of occupant injuries in a crash are discussed. Seat belt effectiveness, integrated seats, passive restraint systems, and seat belt improvements are described. Progress in reducing the injury potential of steering columns, instrument panels, and windshields is presented. The importance of matching front end crush with occupant restraints, and achievements improving passenger compartment integrity are discussed. Determination of human impact tolerance is also considered. The experimental safety vehicle program, which will provide the basis for further improvements in occupant protection and vehicle design, is mentioned.
HS-013 383

THE VEHICLE

Volvo A.B., Goteborg (Sweden)
For primary bibliographic entry see Fld. 5D.
HS-013 399

HSRI TWO-DIMENSIONAL CRASH VICTIM SIMULATOR: ANALYSIS, VERIFICATION, AND USERS' MANUAL. REVISION NO. 1. FINAL REPORT

Michigan Univ., Ann Arbor
For primary bibliographic entry see Fld. 3B.
HS-800 849

AN EVALUATION OF THE PERFORMANCE CHARACTERISTICS OF ANTHROPOMORPHIC TEST DEVICES. VOL. 1. FINAL REPORT

Cornell Aeronautical Lab., Inc., Buffalo, N.Y.
For primary bibliographic entry see Fld. 3B.
HS-800 869

5T. Trucks And Trailers

AN EVALUATION OF MEASURES TO REDUCE ACCIDENT OCCURRENCE

Melbourne Univ. (Australia)
For primary bibliographic entry see Fld. 5D.
HS-013 382

5V. Wheel Systems

APPROXIMATE DYNAMIC SHIMMY RESPONSE OF PNEUMATIC TIRES

H. B. Pacejka 1973 7refs
Vehicle System Dynamics v2 n1 p49-60 (Mar 1973)

Pneumatic tires, Shimmy, Tire slip motion, Tire moments, Tire road contact forces, Lateral force, Mathematical models, Inertial forces, Deformation, Inertia, Equations, Tire side forces, Tire deflection, Crossply tires, Radial tires, Frequencies, Torque, Vibration control

An improved approximation of the theory of the dynamic frequency response of side force and aligning torque acting upon the rolling wheel when the latter is moved laterally and swivelled about the vertical axis is presented. The method is particularly suitable for application in vibration problems of steering and suspension systems of automobiles and aircraft where relatively high speed and high frequency phenomena play a role. The theoretical results show satisfactory agreement with experimental data. Calculations indicate that the inertia of the tire decreases the tendency to shimmy at higher frequencies and speeds of travel. For castered wheels however, tire inertia may have an adverse effect due to its unfavorable influence upon the side force response to swivel motions.
HS-013 324

REPORT NUMBER INDEX

FA-5018-V-1	
HS-800 869	3B
HS-013 324	5V
HS-013 325	5D
HS-013 326	5D
HS-013 327	5D
HS-013 328	5D
HS-013 329	5D
HS-013 330	5D
HS-013 331	5D
HS-013 332	5D
HS-013 333	5D
HS-013 334	5D
HS-013 335	5D
HS-013 336	1
HS-013 337	2
HS-013 338	1C
HS-013 339	1F
HS-013 340	1C
HS-013 341	1B
HS-013 342	1C
HS-013 343	2I
HS-013 344	1B
HS-013 345	3D
HS-013 346	1E
HS-013 347	4A
HS-013 348	3K
HS-013 349	1B
HS-013 350	3K
HS-013 351	5C
HS-013 352	3A
HS-013 353	3A
HS-013 354	3A
HS-013 355	3A
HS-013 356	3A
HS-013 357	3A
HS-013 358	2I
HS-013 359	2I
HS-013 360	2I
HS-013 361	1C
HS-013 362	1A
HS-013 363	1A
HS-013 364	1A
HS-013 365	2
HS-013 366	2D
HS-013 367	1C
HS-013 368	3A
HS-013 369	3D
HS-013 370	3D
HS-013 371	3D
HS-013 372	3D
HS-013 373	3D
HS-013 374	3F
HS-013 375	2D
HS-013 378	2E
HS-013 379	2D
HS-013 380	5D
HS-013 381	5D
HS-013 382	5D
HS-013 383	5N
HS-013 384	3F
HS-013 385	5I
HS-013 386	3A
HS-013 387	3A
HS-013 388	3A
HS-013 389	3A
HS-013 390	3A
HS-013 391	4H
HS-013 392	4H
HS-013 393	4H
HS-013 394	3E
HS-013 395	3E
HS-013 396	3E
HS-013 397	4B
HS-013 398	2
HS-013 399	5D
HS-013 400	2D
HS-013 401	3E
HS-013 402	3A
HS-013 403	3D
HS-013 404	4H
HS-013 405	2
HS-800 849	3B
HS-800 869	3B
HS-800 883	1A
SAE-SP-382	
HS-013 325	5D
SAE-730478	
HS-013 326	5D
SAE-730479	
HS-013 327	5D
SAE-730480	
HS-013 328	5D
SAE-730481	
HS-013 329	5D
SAE-730482	
HS-013 330	5D
SAE-730483	
HS-013 332	5D
SAE-730484	
HS-013 335	5D
SAE-730485	
HS-013 334	5D
SAE-730486	
HS-013 331	5D
SAE-730487	
HS-013 333	5D

☆ U. S. GOVERNMENT PRINTING OFFICE : 1973 OLT - 543-366 (11)

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
Office of Administration
WASHINGTON, D.C. 20590
OFFICIAL BUSINESS
Penalty For Private Use, $300

POSTAGE AND FEES PAID
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
517